COLUMBIA LIBRARIES OFFSITE
HEALTH SCIENCES RESTRICTED
HR00237183

Columbia University
in the City of New York

College of Physicians and Surgeons

Library

Digitized by the Internet Archive
in 2010 with funding from
Open Knowledge Commons (for the Medical Heritage Library project)

http://www.archive.org/details/annualreportofs09illi

NINTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

OF

ILLINOIS.

LIBRARY

WITH AN APPENDIX

EMBRACING

Report on the State Sanitary Survey.
Vital Statistics of Illinois and Coroners' Inquests.
Meteorological Tables.
Report on State Medicine in 1886.

SPRINGFIELD, ILL.:
Springfield Printing Co., State Printers.
1889.

NINTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH OF ILLINOIS.

ILLINOIS STATE BOARD OF HEALTH.

Office of the Secretary,
Springfield, Ill., 1887.

To His Excellency, Richard J. Oglesby, *Governor:*

Sir: In conformity with the Twelfth Section of an Act to Create and Establish a Board of Health in the State of Illinois, approved May 25, 1877, I have the honor to submit to you the accompanying Report for the year 1886.

Very respectfully,
John H. Rauch, M. D.,
Secretary.

Note: The delay in issuing this report is owing to the complications that existed in the State printing contract during the years 1887 and 1888.

113391

CONTENTS.

NINTH ANNUAL REPORT:

PAGE.
Letter of Transmittal from the Secretary........ v
List of Members of the Board........ viii
Summary Report of the Board........ ix

Abstract of Proceedings at the Meetings During the Year 1886:

Annual Meeting, Springfield, January 21-22........ iii
Special Meeting, Chicago, March 6........ vii
Quarterly Meeting, Chicago, April 15-16........ ix
Quarterly Meeting, Chicago, June 29-30........ xvii
Sanitary Conference........ xxi
Quarterly Meeting, Chicago, October 28-29........ xxxiv
Summary of Office Work and Miscellaneous........ lx
Financial Statement........ lxvii
Itemized Statement of Expenditures........ lxvii
Report of the Treasurer........ lxviii

APPENDIX:

State Sanitary Survey........ 5
Vital Statistics and Coroners' Inquests........ 161
Meteorological Tables........ 245
Report on State Medicine........ 250
Index........ 267

MEMBERS OF THE BOARD.

Newton Bateman, LL. D., Galesburg, *President.*
A. L. Clark, M. D., Elgin, *Treasurer.*
W. A. Haskell, M. D., Alton.
W. R. Mackenzie, M. D., Chester.
G. N. Kreider, M. D., Springfield.
R. Ludlam, M. D., Chicago.
John H. Rauch, M. D., Chicago, *Secretary.*

SUMMARY REPORT OF THE BOARD.

To His Excellency, RICHARD J. OGLESBY, *Governor.*

SIR:—The feature of greatest public interest in the labors of the STATE BOARD OF HEALTH during 1886 has been its preventive work with reference to the exclusion of Asiatic cholera, or to its limitation if the disease should, unfortunately, gain access to this country. It has continued in Italy and along the Austrian coast of the Adriatic, and at the close of the year occasional cases were still reported in Austria and Hungary and one or two in the German Empire.

Although not to be compared in severity, extent or rapidity of spread with historic epidemic of 1817–23, of 1836–37, of 1846–63 and of 1865–75, its continued prevalence is the cause of general apprehension, since the occurrence of even a few cases is sufficient to seriously disturb commerce and travel and to entail great pecuniary losses and much personal suffering and inconvenience. Its recent irruption into Chili from the Argentine Republic caused the Governor of Texas to declare a rigid quarantine against South American commerce to be enforced in all cases where there is reason to suspect intercourse with the infected area.

ONE of the must useful functions of sanitary science, and one whose utility may be appreciated by all classes of the community, is that of guarding against these disastrous interruptions of commercial and personal intercourse: of avoiding, so far as practicable, the necessity for the establishment of quarantine; and of so preparing a community as that, in the event that an epidemic contagious disease is nevertheless introduced, the ravages of such disease and its duration may be controlled and limited.

With respect to Asiatic cholera no sanitary principle is more firmly established than that all-embracing cleanliness is the best and the sufficient safe-guard against its epidemic spread. Its contagion finds a congenial home and nursery wherever there is an impure water-supply and a filth-polluted soil. On the other hand, not alone are cholera and other epidemic diseases largely preventable by good sanitary conditions, but the general health of the community is best preserved, its sick rate and mortality are reduced, and its effective working value is increased, by establishing and maintaining such conditions.

To this end the BOARD has directed its energies during the past year more strenuously than ever before to the promotion of domestic and municipal sanitation and to the prosecution of the Sanitary Survey of the State—the first steps toward which were taken in 1883. House-to-house inspections have been continued in the majority of places where these were made last year and have been extended to a number of others, so that they now embrace an aggregate of nearly half a million inspections and re-inspections of houses and premises in about 400 cities, towns and villages. The scope and character of this form of sanitary work have been fully detailed in previous reports, and especially in the Appendix to the Eighth Annual. Briefly the object is to ascertain the material conditions—primarily of the home and its surroundings—as these affect the well-being of the individual, and thence to secure a remedy of defects and an abatement of nuisances prejudicial to health.

Fifteen more cities and towns—namely, Alton, Anna, Beardstown, Belleville, Carlinville, Carrolltown, Collinsville, Freeburg, Mt. Vernon, Rockford, Rock Island, Springfield, Streator, Tuscola, and Urbana—have completed their Sanitary Surveys. Many of those which made surveys in 1885 have perfected them during 1886, and the work is now well understood and intelligently performed. A total of thirty-four of the more important cities and towns of the State have thus secured tolerably complete records of what may be called their vital conditions, embracing for each place the important data concerning location, population and climate; topography; water supply; drainage and sewerage; streets, alleys and public grounds; habitations; gas and lighting; disposal of garbage and excreta; markets and food supply; slaughter-houses and abattoirs; manufactories and trades; hospitals and public charities; police and prisons; fire establishments; cemeteries and burials; public health laws and regulations; municipal officials; registration and statistics of death and diseases; municipal sanitary expenses; and public schools.

This work and the knowledge acquired in the inspections are not only the best safeguards against Asiatic cholera or other rare epidemic visitation, but they are of the highest value in their effects upon the general health and working capacity of the community. Municipal authorities, health officers and physicians concur in the statement that the good sanitary condition of the State is the immediate cause of the low death-rate which has obtained throughout the year and of our freedom from the usual prevalence of many of the zymotic or preventable diseases.

WHILE the BOARD has been thus successful in organizing and promoting sanitary work by municipalities and individuals, it has continued the effort to supplement such local action by prosecuting the investigation into the water supplies of the State, the disposal of sewage and the pollution of streams. These are matters affecting large areas of territory in common, and yet, in the nature of the case, they are such as cannot be controlled by the independent action of communities. The disposal of Chicago sewage, for example, is a matter of concern to the entire Illinois valley; but neither Chicago alone nor any of the cities and towns below is competent to deal with the question without reference to its neighbors.

The work of investigation undertaken by the Secretary of the BOARD has already proved of great value in determining some of the factors of the problem, and the instalment published in this volume is deemed worthy of special mention. Owing to the remarkable meteorological conditions which obtained during several months the observations on the rate of sewage oxidation—or the self-purification of the canal and river—have much of the exactness and certainty of work conducted in a laboratory. This report, which will be found in the *Abstract of Proceedings*, has already attracted the attention of those engaged in the study of water supplies and the pollution of streams, not only in this country but abroad.

The investigations are being steadily pursued in addition to the routine work of the Secretary's office, the enforcement of the Medical-Practice Act and the general sanitary supervision of the State.

It remains to add, as of special interest to your Excellency and the tax-payer, that there has been the same prudent economy in the administration of the appropriations made by the Generally Assembly for this "supervision of the interests of the health and life of the citizens of the State," as has heretofore obtained throughout the history of the Board. The Thirty-fourth General Assembly held in 1885 made a contingent appropriation of $40,000, to be used in the discretion of the Board, and subject to your approval, "in case of the outbreak or threatened outbreak of any epidemic or malignant disease, such as Asiatic cholera, small-pox or yellow fever, or to defray the expense of preventing the introduction of such diseases, or their spread from place to place within the State, and in suppressing outbreaks hich may occur, and in investigating their causes."

"Preventing the introduction of such diseases" is better in every respect than their suppression after they have appeared; and all the work of house-to-house inspection and sanitary surveys, the investigation of water supplies, enforcement of vaccination, instruction in hygiene and preventive medicine, the abatement of nuisances, etc., etc., has been undertaken, promoted and supervised with this end in view.

By formulating the lines of work and securing the proper organization through the personal labors of the Secretary, this has been accomplished with a minimum of expense to the municipalities directly interested and benefitted and without trenching upon the contingent appropriation to the extent of a single dollar. Unless some unforeseen contingency should arise, within the next few months, this sum of $40,000 may be covered back into the State Treasury at the end of the fiscal year.

If, unfortunately, Asiatic cholera should get a foothold upon this continent, or other of the dreaded diseases should become epidemic in this country, Illinois, is, it is safe to say, in a better condition than ever before to resist their invasion. The State is, in fact, second to no other in the Union in respect of its sanitary status; and this, under the favoring dispensation of Divine Providence, is our safeguard against epidemic pestilence as it is the promise of a continuance of our present low death rate and satisfactory condition of public health.

Very respectfully,
NEWTON BATEMAN.
A. L. CLARK.
W. A. HASKELL.
W. R. MACKENZIE.
G. N. KREIDER.
R. LUDLAM.
JOHN H. RAUCH.

ABSTRACT OF PROCEEDINGS

OF THE

ILLINOIS STATE BOARD OF HEALTH, 1886.

ABSTRACT OF THE PROCEEDINGS

OF THE

ILLINOIS STATE BOARD OF HEALTH

AT THE

MEETINGS DURING THE YEAR 1886.

ANNUAL MEETING, SPRINGFIELD, JANUARY, 1886.

THE Ninth Annual Meeting of the ILLINOIS STATE BOARD OF HEALTH was held in the rooms of the BOARD in the Capitol building, Springfield, Thursday and Friday, January 21–22, 1886.

Present during the sessions: Newton Bateman, A. L. Clark, R. Ludlam, W. A. Haskell, W. R. Mackenzie, and John H. Rauch. The minutes of the quarterly meeting held October 29–30, 1885, were read and approved. The regular order of business was suspended to give an opportunity to present a memorial from the undertakers of the State of Illinois to allow them the privilege of shipping within and without and between points within the State dead bodies inclosed in any kind of wooden boxes, zinc, copper, or lead-lined or iron caskets which are air-tight, where the bodies are prepared in keeping with the rules of the BOARD. The subject was discussed, and finally referred to a special committee, consisting of Drs. Rauch, Haskell and Mackenzie.

Upon the call for reports of officers, the Secretary presented his paper entitled "Coast Defences against Asiatic Cholera—Report of an Inspection of the Quarantines maintained along the Atlantic and Gulf Coasts from the St. Lawrence to the Rio Grande."

Upon motion of Dr. Mackenzie, the report was received and ordered printed.*

---

*This paper was published in the Eighth Annual Report of the BOARD (pp. 16–57).

At the evening session the election of officers for the year was had, with the following result:

Hon. NEWTON BATEMAN, LL.D., Galesburg, President.

A. L. CLARK, M. D., Elgin, Treasurer.

JOHN H. RAUCH, M. D., Chicago, Secretary.

The regular order of business being resumed, the Secretary presented his quarterly report and annual summary. [The text of this—concerning the work of the Secretary's office during the quarter and the year; the publications of the BOARD; certificates and licenses; medical education; the Medical-Practice Act, and cases of W. R. Alexander, Alfred Schmidt and Lucas R. Williams *alias* "Dr. Lucas," with decision of appellate court in the Williams case and decisions of the supreme court of Minnesota in similar cases; the public health and Chicago water supply—has already been published in the Eighth Annual Report of the BOARD.]

On motion of Dr. Ludlam, the report of the Secretary was received and ordered printed in the published proceedings of the BOARD.

Adjourned to 9 o'clock A. M. Friday.

FRIDAY, January 22, 9 o'clock A. M.—The BOARD met pursuant to adjournment, the President, Newton Bateman, in the chair.

On motion of Dr. Mackenzie, the report of the Secretary was taken up for discussion and consideration. The section concerning the Medical-Practice Act was finally disposed of by the adoption of the following resolution:

Resolved, That action by the BOARD on all cases under the Medical-Practice Act be postponed to a special meeting to be called by the Secretary.

Concerning the work of Sanitation in the State in anticipation of cholera, the following was adopted:

Resolved, That the results of the efforts of the BOARD in State Sanitation, during the past year, have been so satisfactory upon the health conditions of the majority of our cities, towns and villages, that, in our judgment, the work should be resumed and vigorously prosecuted on the opening of spring, especially in view of the fact that the danger from Asiatic cholera still continues.

Dr. Haskell offered the following, which was also adopted:

Resolved, That, in view of the importance and extent of the sanitary interests involved, the Secretary be instructed to continue his investigations into the conditions affecting the water supply of Chicago and adjacent localities, and the questions embraced in the sewage disposal thereof; and that he be directed to forward a copy of his report and of this resolution to the Mayor and City Council of Chicago, and to the authorities of other localities interested.

A number of questions concerning the status of medical colleges were considered, and the action of the BOARD in relation to them was ordered to be communicated by the Secretary to the institutions.

The committee to which was referred the memorial concerning the transportation of dead bodies, submitted a report recommending sundry changes in the rules of the BOARD on this subject. The report was adopted and the Secretary was instructed to publish the following:

REVISED RULES OF THE STATE BOARD OF HEALTH, FOR THE TRANSPORTATION OF CORPSES BY RAILROADS AND STEAMBOATS, IN THE STATE OF ILLINOIS.

Rule 1.—The transportation of the bodies of those who have died of Small-Pox, Asiatic Cholera or Yellow Fever is absolutely forbidden.

Rule 2.—All other dead bodies, when presented for transportation, must be enclosed in air-tight zinc, copper or lead-lined wooden boxes, or in air-tight iron caskets; or, if in any other form of coffin, they must be first enclosed in hermetically-sealed antiseptic interment sacks.

Rule 3.—The bodies of those who have died of Diphtheria, Scarlet Fever, Typhus or Typhoid Fever, or other contagious or infectious diseases, must be wrapped in a disinfectant cerecloth—a sheet saturated in a solution of chloride of zinc, half-pound of the salt to a gallon of water. They must then be enclosed as prescribed in Rule 2.

Rule 4.—Every dead body must be accompanied by (1) a Physician's certificate, showing cause of death, or a certificate of inquest from the coroner, or a permit for transportation (stating cause of death), from the clerk of the local Board of Health; and (2) a written certificate from the shipping undertaker, that the corpse has been prepared for transportation in accordance with the foregoing rules of the ILLINOIS STATE BOARD OF HEALTH.

THE afternoon session was devoted to the transaction of routine business, the auditing of bills, etc.

On motion of Dr. Haskell, the Secretary was authorized to act for the BOARD in any emergency which may arise in the interim pending the next meeting.

Drs. Haskell and Mackenzie—reappointed auditing committee for the ensuing year—reported bills and accounts for the quarter, amounting to $2,952.61 examined, found correct and recommended that they be paid.

Adjourned.

SPECIAL MEETING, CHICAGO, MARCH, 1886.

Pursuant to the call of the Secretary issued in accordance with the action of the Board at its January meeting, a special meeting of the Board was held at the Grand Pacific Hotel in Chicago, March 6, 1886, for the consideration of cases under the Medical-Practice Act.

Present: R. Ludlam, A. L. Clark, W. A. Haskell and John H. Rauch. Dr. Haskell occupied the chair in the absence of the President.

The case of Dr. W. R. Alexander, of Quincy, Illinois, was first considered.

On December 28, 1885, Certificate No. 7198 was issued to the said Alexander, his affidavit representing him to be a graduate of the Medical Department of the University of the City of New York, and in other respects his papers seemed satisfactory.

Early in January complaints were filed against him of unprofessional and dishonorable conduct. He was first cited to appear before the Board at its meeting on January 21, the jurat of the deputy sheriff who served the notification upon him being in evidence. No action having been taken at that meeting he was again, on March 3, 1886, cited to appear before the Board at this meeting, the charges against him being duly recited as follows:

"1. That by means of circulars and through the press you announce yourself to the public as 'One of New York's most eminent specialists,' claiming special qualifications for the treatment of all chronic diseases and deformities, diseases of women and private diseases, and guaranteeing the cure of others, knowing that many of these statements are false and with the intent of imposing upon the sick and afflicted.

"2. That by means of circulars you call attention to what the press and the public have to say with regard to your wonderful cures and how you stand at the head of the profession, many of said notices being paid for by yourself.

"3. That you obtained your certificate mainly upon the recommendation of one T. J. P. O'Brien, M. D., C. M., Professor of

Physiology and Pathology in the Kansas City Medical College, it having since been ascertained that the said O'Brien is not what he claimed to be—a Professor in said college.

"4. That you are an itinerant."

After due consideration of the evidence in the case and in default of any defence, denial or other response on the part of said Alexander, the following resolution was unanimously adopted, to-wit:

Resolved, That charges of "unprofessional and dishonorable conduct" having been proven against W. R. Alexander, of Quincy, Illinois, a graduate of the Medical Department of the University of the City of New York, certificate No. 7198, of the STATE BOARD OF HEALTH OF THE STATE OF ILLINOIS, issued to the said Alexander on the 28th day of December, 1885, and legally entitling him to practice medicine in the State of Illinois, be and hereby is revoked.

Sundry other cases were considered but no definite action taken on any before adjournment.

The auditing committee reported bills to the amount of $521.60 as correct, and on motion they were ordered paid.

Adjourned.

QUARTERLY MEETING, CHICAGO, APRIL, 1886.

The regular quarterly meeting of the ILLINOIS STATE BOARD OF HEALTH was held at the Grand Pacific Hotel, in Chicago, Thursday and Friday, April 15-16, 1886.

Present during the sessions: Newton Bateman, R. Ludlam, A. L. Clark, W. R. Mackenzie, G. N. Kreider and J. H. Rauch--the President, Newton Bateman, in the chair.

The BOARD was called to order at 10 A. M. Thursday, and the minutes of the regular quarterly meeting in January and of the special meeting in March, were read and approved. The examination of a class of thirteen applicants for certificates was begun—fourteen others had made written application, and been notified of the date and place of meeting, but failed to appear.

Upon call for reports of officers, the Secretary presented the following:

QUARTERLY REPORT OF THE SECRETARY.

During the quarter ended March 31, 1886, there were received in the Secretary's office, 2,298 written communications, besides 118 diplomas submitted for verification and the papers pertaining to 138 applications for certificates. There were sent out during the same period 2,325 written communications, exclusive of 127 certificates and accompanying instructions. Of the publications of the BOARD, there were distributed 1,840 copies of the Seventh Annual Report; 2,175 copies of the Fourth Official Register; 625 copies of the Report on Medical Education for 1885; 4,250 copies of the last Quarterly Report; 104 copies of Decisions under Medical-Practice Acts, and about the usual number of other publications—Preventable-Disease Circulars, Epidemic-Disease Blanks and Instructions, Public-Health Laws and Sanitary-Memoranda, Medical-Practice Act instructions, etc.

Certificates and Licenses:

Of the 127 certificates and licenses issued, as above noted, 100 were to physicians upon diplomas of medical colleges recognized as in good standing in accordance with the schedule of minimum requirements of the BOARD; 8 to graduates who were required to supplement their diplomas by examination, or by evidence of a satisfactory preliminary education; 2 were to doctors upon proof of more than 18 years' practice in Illinois; 11 were to midwives, graduates of recognized schools; 5 to midwives upon examination and 1 upon years' of practice. One itinerant license was issued; and certificates were refused to 8 physicians who were unable to comply with the law, and to 3 midwives who failed to pass a satisfactory examination. Of the 108 certificates issued to physicians upon diplomas, 59 were to graduates of medical colleges in Chicago, and the remainder (49) to graduates of colleges outside the State.

Medical Education:

This is the third year of the enforcement of the Board's Schedule of Minimum Requirements of Medical Colleges—compliance with which is necessary to entitle a school to "good standing" for the purposes of the Medical-Practice Act. The general results of this enforcement have already been set forth, and are claimed to be fairly satisfactory. It seems necessary, however, to call attention to a feature only incidentally alluded to in the following phrase from my last quarterly report: "A marked reduction [is shown] in the percentage of the graduates to matriculates in some colleges where the proportion was formerly very high.". This reduction is believed to be the logical result of an honest attempt by such colleges to exact a higher standard of attainments in those aspiring to their diplomas. Unfortunately it is only in "some" colleges that this attempt has been made, and last year the percentages of graduates to matriculates rose as high in individual cases as 52 for regular, 57.7 for homeopathic and 58.3 for eclectic colleges—the averages of all schools being 33.3 for regular, 32.6 for homoeopathic and 33.9 for eclectic, and the minimum 10.5, 17.6 and 15, respectively. It is obvious that, deducting the annual losses, a two-year school whose average percentage of graduates for a series of years is as high as 45 must practically grant its diplomas to candidates for graduation without due regard to competency or qualification. Such an average percentage must be held to be *prima facie* evidence of the worthlessness of the diploma as a proof of fitness to practice medicine, no matter what the claims of the college may be on paper. The subject is one to which I have given much thought and study, and as it has heretofore been informally discussed by the members, it is suggested that it be taken up for action at the present meeting.

Vital Statistics:

Something over 1,200 letters have been written during the quarter, direct to physicians, concerning the returns of births and deaths. It is exceedingly gratifying to be able to state that, with very rare exceptions, the members of the profession express in their replies a hearty sympathy with the efforts of the Board to secure a more perfect registration of vital statistics. In the large majority of instances where Section 4 of the State Board of Health

Act has not been fully complied with, the omissions have been due to inadvertence, and not to hostility to the requirements of the law. This correspondence conclusively proves that Illinois physicians are law-abiding citizens. There is apparent, also, a very general recognition of the benefits conferred upon the profession by the legislation embodied in the acts to regulate the practice of medicine, and to create a State Board of Health and a corresponding desire to reciprocate, in some measure, by aiding in the important work of ascertaining the causes of mortality and of acquiring other information affecting life and health in the State. This matter of vital registration in the United States is inferior to that of any other civilized country, and the profession in Illinois owe it to themselves and to the public to do their fair share of labor necessary to redeem the country from such a contrast. One result of the recent correspondence is to strengthen the conviction that such a revision of the law as was asked for at the last session of the General Assembly, is desirable both to relieve the physician of unnecessary drudgery, and to secure fuller and more accurate returns. On the other hand, it is suggested that the BOARD consider whether any modification of the certificates of births and deaths is desirable and practicable, with the same ends in view.

Except in one or two instances, the BOARD is receiving in this effort the active co-operation of the county clerks, all of whom have been written to, and some of whom have been visited personally. It is to be regretted that in some of the counties there is no suitable provision by the county commissioners or board of supervisors for the clerical expense entailed upon the county clerk for this work. The principal difficulty in the way of obtaining a prompt and satisfactory compliance with Section 8 of the act arises from this cause. As a result of the work already done during the past two months, the returns of vital statistics for 1885 are in a much more advanced state than ever before at this season, and there is promise of a decided improvement in the returns of the current year. Incidentally, much valuable information has been obtained through this correspondence, concerning the personnel of the profession.

Public Health:

Aside from the increase of diseases of the respiratory organs usual at this season of the year, the general health of the State remains good. Pneumonia has been quite prevalent over a widely extended area, especially during March; but no reports of any unusual mortality from this cause have been received. Scarlet Fever is reported in Cumberland, Coles, Edgar and McHenry counties, to such an extent in some localities as to cause the schools to be temporarily closed. Instructions have been issued in all these cases and the Preventable-Disease circulars supplied.

Early in March a tramp in the eruptive stage of small-pox made his appearance in the town of Carmi, White county, but the case seems to have been diagnosed as chicken-pox. A photograph of one of seven resulting cases was sent me, on receipt of which vaccine virus was ordered from Chicago, by telegram, to be sent to the mayor, and the printed instructions of the BOARD concerning small-pox were forwarded. On the 7th of April, being advised that there were still doubts as to the character of the disease, Dr. Utley was dispatched to the locality. He reports three deaths and seven cases of small-pox. The town board of health, at a meeting on the 8th inst., took the necessary steps to enforce the precautions directed by the BOARD in Preventable-Disease Circular No. 1. The schools were ordered closed; every house in which there was a case was directed to be strictly quarantined, together with the inmates; vaccination was to be thoroughly carried out, not only in the case of all persons suspected of having been exposed, but of all those in Carmi and vicinity not successfully vaccinated within the last twelve months; and the city physician was required to make frequent house-to-house inspections in order to discover any new cases that might occur.

Since Dr. Utley's return one new case has been reported, and it is rumored that there are other cases in the county outside of Carmi. Applications have been received from neighboring places for authority to establish quarantine against the infected town, but such a step has not been believed to be necessary. Instead of this proper instructions have been issued, and supplies of vaccine virus have been furnished where the conditions from exposure seemed urgent.

A group of cases in one family from Champaign has also been reported. The source of contagion is understood to have been a woman from Indiana. There have also been a few cases in Chicago.

Asiatic Cholera:

In addition to the localities infected with Asiatic cholera at the date of my last report, the disease has invaded the province of Finisterre in the northwest of France, where there have been reported 197 cases and 32 deaths. Within a very short time another locality in the province is reported to be infected, and the disease has extended in Italy to the provinces of Calabria and Lombardy. It is probable that it exists elsewhere in Southern Europe, and its northward march is anticipated with the advancing season. Thus far in the present epidemic, the serious outbreak in Finisterre is the farthest point north to which the disease has extended. Grave apprehensions of its spread to Germany during the approaching warm weather are felt, and there is more danger of its general European extension this year than last.*

---

*Late reports state that cholera has appeared at Brindisi and Lecce in the south of Italy. The following editorial, taken from the *London Lancet* of April 3d, shows the feeling on this subject in England:

"We have now entered fully into the spring of another year, and the time has come when we may fairly take account of the prospects of this country with reference to cholera. For three consecutive years cholera has prevailed as an epidemic, either in or upon the immediate confines of Europe. Its prevalence in Egypt in 1883 was not followed by a second epidemic in 1884; but as to this we may observe that a second year's epidemic is more apt to follow on a comparatively trifling outbreak than upon a widespread epidemic such as Egypt suffered from three years ago. In

I have deferred urging the resumption of the sanitary work, the house-to house inspection, etc., begun last year, until after the spring elections. It was found that letters, circulars, blanks, etc., addressed to municipal officials, town and village trustees and other elective officers on the eve of a change, were very apt to be overlooked and mislaid, so that they failed to reach the new men. Now, however, it is believed to be the duty of the BOARD to urge a resumption of this work, which should be vigorously pushed before hot weather. There is greater need of securing a good sanitary condition of the State now than at any time since cholera was first reported in Toulon in 1883.

I would also suggest that the health officers of the State be invited to a conference for the purpose of promoting local sanitation.

Chicago Water Supply:

The observations of the conditions affecting the character of the Chicago water supply have been continued during the quarter. They confirm the conclusions already arrived at, but the observations will be continued to complete a full period of twelve months, until which time extended analysis and comment is deferred. In a general way it may be again stated that the purity of the drinking water drawn through the lake tunnel is affected by the discharge from the Chicago river into the lake, whether this be caused by a lower lake level, by an overflow from the DesPlaines river, the drainage of the territory adjoining, or by failure to operate the Bridgeport pumps. During the winter months this result is complicated by the extension of ice from the shore, retarding oxidation; by thaws of large quantities of polluted snow; and by the diminished flow through the canal, caused by ice obstruction. This latter condition also affects the oxidation of the contents of the canal.

Spain the outbreak of 1884 was but slight; but in 1885 the disease broke out again with exceptional violence, thus following the precedents so often observed before. On the other hand an epidemic of very fatal virulence in the south of France and in Paris during the summer of 1884 did not succeed in preventing another fatal prevalence in the same country in 1885; hence it appears that cholera does not follow any very definite laws as regards its recurrences, and in forming a judgment as to the future, we must, in the main, be guided by other considerations.

The news of the past two months supplies us with material that calls for earnest consideration. Cholera has continued to prevail in several parts of Europe during the winter months, and this week's intelligence of its recrudescence in the mining districts about Bilboa, in the north of Spain, comes to remind us of a real danger to this country. For months past, the disease has prevailed in a more or less sporadic form along the coast of the Adriatic, between Venice and Trieste, and also further inland, and occasional outbreaks have taken place in the extreme south of Spain, and in near proximity to Gibraltar. But these occurrences do not constitute so great a danger to this country as the existence of the disease along the north coast of Spain, and about the coast of Brittany, from both of which districts there is an ill-regulated traffic carried on by fishing boats. Both these districts have been affected at intervals ever since the termination of the great epidemic of last year, and the very imperfect information we have received concerning the extent of the mischief—and this especially from the French authorities, whose mistaken policy of prevention seems mainly to lie in hushing up the truth as to the danger which exists—prevents us from knowing precisely what it is that we have to contend with. But if it should happen that an uncontrolled diffusion of the infection along coasts with which we are in frequent and in near communication should follow former precedents, and this year gives rise to a widespread epidemic, then a danger will have arisen which exceeds any we have as yet experienced during the epidemic of 1883–6. We must remember that the last great diffusion of cholera, beginning in the summer of 1869, had a five years' course in Europe, and that there are strong indications that the epidemics of the two preceding years are but a part of another diffusion which has not yet ended. It is therefore imperatively important that the authorities of those districts which, notwithstanding warnings and teaching such as they have never before had the benefit of, have not yet gotten rid of the conditions favorable to cholera diffusion, should without further delay proceed with energy, and fit themselves to cope with imported infection."

The average lake level* during January was 9 ft. 6 in., the extremes being 9 ft. on the 13th and 22d, and 10 ft. 7 in. on the 5th. The pumps were operated continuously, maintaining a mean difference of 3 ft. between the river and canal levels throughout the month, the minimum being 1 ft. 11 in. on the 5th, when the lake or river level was 10 ft. 7 in., and the canal level was 12 ft. 6 in.; and the maximum being 3 ft. 8 in. on the 31st, when the lake level was 9 ft. 4 in. and the canal was 13 ft., this level being maintained from the 28th of January to the 8th of February, with only two days' slight variation.

On the whole, the water was fairly good throughout January as compared with its condition in the same month of late years. The notable exceptions were on the 16th (resulting from a thaw), and on the 23d (probably owing to oxidation being retarded by ice). On these occasions the chemical examinations showed a condition as bad as in September last, but this was of short duration—a fact to be attributed to the constant operation of the pumps.

Between the 9th, and 12th, and 16th, and 22d of February, the pumps were not operated, owing to the overflow from the DesPlaines river, caused by thaw and rains. The effect of this suspension, and of the freshet discharge into the lake, was at once apparent, and the free-ammonia and oxygen-consumed figures were higher than at any time in the previous seven months. The mean difference between the canal and the lake levels was only 1 ft. 10 in. during this month, the maximum fluctuation of the lake level being 18 inches. After the subsidence of the DesPlaines and the resumption of pumping, on February 28th, the character of the water steadily improved, until at the close of March it was in its best condition. Microscopic examination made during the month showed it to be quite free from any suspicious organic forms. Thus far during April, owing to rough, windy weather, the appearance of the water has not been very good, but it remains practically free from organic matter.

John H. Rauch, Secretary.

On motion, the report of the Secretary was received and ordered printed in the published proceedings of the Board.

Upon the motion of Dr. Mackenzie, seconded by Dr. Ludlam, the following preamble and resolution were adopted:

Whereas, The continuous graduation of forty-five (45) per cent. of the total number of matriculates of a medical college—due allowance being made for the average annual loss—must be accepted as *prima facie* evidence that, practically, every candidate is graduated without regard to competency or qualification; therefore, be it

Resolved, That no medical college be recognized as in good standing within the meaning and intent of the Act to Regulate the Practice of Medicine in the State of Illinois, the aggregate graduates of which college amount to forty-five (45) per cent. of its aggregate matriculates during the period of five (5) years ending with any session subsequent to the session of 1885-86.

---

*As shown by the stage of water in the river at the Bridgeport pumping station.

Friday, April 16, 9 o'clock A. M.—The Board reconvened pursuant to adjournment from Thursday night; present as before. The examination of candidates for certificates authorizing practice in Illinois was resumed. The following resolutions were adopted:

Resolved, That in view of the apparently irregular manner in which diplomas have been conferred by the Beach Medical Institute of Indianapolis, this Board declines for the present to receive the diplomas of that institution as the basis for certificates authorizing practice in the State of Illinois.

Resolved, That, after due consideration of the evidence submitted in the case of Alfred Schmid, Certificate No. 6,493, issued to him May 1, 1884, be and hereby is revoked, it being conclusively proven that said certificate was fraudulently obtained.

On motion of Dr. Ludlam, the Secretary was authorized, in accordance with the suggestion in his quarterly report, to call a conference of local health officers for the purpose of promoting local sanitation throughout the State.

On motion of Dr. Clark, the Secretary was authorized to act for the Board in any case of emergency arising in the interims of the meetings.

The usual routine business was transacted, including the auditing of bills for the quarter amounting to $3,314.10.

The remainder of the session was devoted to the consideration of cases under the Medical-Practice Act.

At 6 o'clock p. m., Friday, the examination of candidates was concluded; the following were successful:

Frank C. Bourscheidt, Peoria.
Clarence A. Earle, Chicago.
William J. Egloff, Chicago.
Joseph P Hough, Lincoln, Logan County.
Charles V. Jenkins, Buckley, Iroquois County.
Herbert E. Pratt, Chicago.

Adjourned.

QUARTERLY MEETING, SPRINGFIELD, JUNE, 1886.

THE regular quarterly meeting of the ILLINOIS STATE BOARD OF HEALTH was held in the office of the Secretary, in Springfield, Tuesday and Wednesday, June 29–30, 1886. Present during the sessions: W. A. Haskell, W. R. Mackenzie, G. N. Kreider and J. H. Rauch. In the absence of the President, Dr. Haskell, on motion of the Secretary, presided. The BOARD was called to order at 2 P. M. Tuesday, and the minutes of the regular quarterly meeting in April were read and approved.

The Secretary presented the following:

QUARTERLY REPORT OF THE SECRETARY.

During the quarter ending June 30, 1886, there were received in the Secretary's office 2,176 written communications, besides 191 diplomas submitted for verification and the papers pertaining to 213 applications for certificates. There were sent out during the same period 2,570 written communications, exclusive of 213 certificates and accompanying instructions. Of the publications of the BOARD there have been distributed 147 copies of the Seventh Annual Report; 219 copies of the Fourth Official Register; 288 copies of the Report on Medical Education for 1885; 1,620 copies of the last quarterly Report; 21,350 House-to-House Inspection Blanks, and about the usual number of other publications—Preventable-Disease Circulars, Epidemic-Disease Blanks and Instructions, Public Health Laws and Sanitary Memoranda, Medical-Practice Act, Instructions, etc.

Certificates and Licenses:

Of the 213 certificates and licenses issued during the quarter 174 were to physicians upon diplomas of medical colleges recognized as in good standing in accordance with the schedule of minimum requirements of the BOARD; 6 to graduates who were required to supplement their diplomas by examination, or by evidence of a satisfactory preliminary education; 6 upon examination; 2 were duplicates issued upon proof that the originals had been destroyed; 11 were to midwives, graduates of recognized schools; 12 to midwives upon examination, and 2 upon years of practice. Certificates were refused to 11 physicians who were unable to comply with the law, and 2 to midwives who failed to pass a satisfactory examination.

Quacks and Bogus Diplomas:

A circular recently received from Reynoldsville, Pennsylvania, sets forth in the usual mountebank style, the claims of its author, a "Dr. Heath, of Chicago." A wood-cut of the man adorns the head of the circular, and every line following bears the stamp of falsehood and fraud. The list of diseases to which he claims to have given special attention and cures, includes about all that humanity is afflicted with; and he finally concludes with this statement: "The following named Doctors stand at the head of the Medical Profession and have endorsed the papers of Dr. Heath, and recommended him as a Physician and Surgeon." Then follows a list of the members of this BOARD, and those who signed his diploma.

In examining the records, I find that a John Wm. Heath, of Chicago, was granted a certificate June 11, 1879, on a diploma of the Hahnemann Medical College of Chicago, dated February 27, 1879, also that he has not resided in Chicago for the last six years. The use of the names of the members of this BOARD in this manner is wholly unwarranted, fraudulent, and intended to deceive his victims; in fact the whole circular stamps him to be an unprincipled professional scoundrel. In view of the foregoing, I would recommend that his certificate be revoked for "unprofessional and dishonorable conduct."

Letters have lately been received making inquiries regarding the status of certain practitioners in Iowa; the result, no doubt, of the recent law regulating the practice of medicine in that State. One of the practitioners referred to had presented a diploma of the Chicago Northwestern College.

An examination of the records in the office of the Secretary of State, shows that the Chicago Northwestern College was incorporated in 1862. The following is a *verbatim* copy of the articles of association:

ARTICLES OF ASSOCIATION OF THE CHICAGO NORTHWESTERN COLLEGE.

"*Be It Known*, That Nathan S. Dodge, Stephen L. Wright, Mary A. Black, Joseph S. Dodge, Jacob Bancroft, Daniel Russ, Wm. Briestly and others, desirous of forming an association under the provisions of an act of the Legislature of the State of Illinois, entitled 'An act for the incorporation of colleges and universities,' enacted January 26, A. D. 1849, have adopted the following articles of association:

"Article 1st. Said association shall be known by the name of the Chicago Northwestern College.

"Article 2d. The purpose of this association is to establish a college of both literary and medical branches, and also an infirmary for the treatment of disease.

"Article 3d. The number of trustees called the board of trustees shall be five, Joseph S. Dodge Mary A. Black, Jacob Bancroft, Stephen L. Wright and Nathan S. Dodge.

"Article 4th. There shall be also ten or more censors or secondary trustees, which may be consulted on all important changes in said institution.

"Article 5th. The branches designed to be taught in this institution are the common English branches usually taught in common academies of learning; also, all those usually taught in high schools and colleges; and also all those different departments of medical science usually taught in medical colleges, together with the physical sciences.

"Article 6th. Said institution is to be of the rank of College.

"Article 7th. The number of professorships to be established is ten:

"1st. Professor of Mathematics.
"2d. Professor of Chemistry and Philosophy.
"3d. Professor of Astronomy and Physical Science.
"4th. Professor of the Languages.
"5th. Professor of Anatomy and Physiology.
"6th. Professor of Surgery, and Demonstrative Anatomy.
"7th. Professor of Chemistry, Botany and Medical Jurisprudence.
"8th. Professor of Therapeutics, Pathology and Theory and Practice of Medicine.
"9th. Professor of Materia Medica, and the Science of Voice, Gesture and Speech.
"10th. Professor of the Theory and Practice of Hydropathy, Homœopathy, and the Homœopathic and Hydropathic Materia Medica.

"Article 8th. The capital stock of said institution not to exceed six hundred thousand dollars.

NATHAN S. DODGE,
J. V. WATSON,
A. M. SLUTTER,
CHRISTIAN BRUSTLE,
J. S. DODGE,
MARY ANN BLACK.

To a better understanding of the status of this college, I quote from the Third Annual Report of this BOARD, published in 1880, the following:

"The Edinburg University of Chicago was incorporated under the general laws of the State on the 23d day of September, A. D., 1870. The incorporators were Nathan L. Dodge, A. L. Edwards, James Black, E. B. Tobin and H. H. Hitchcock, all said to be of Chicago. None of these parties could be found in Chicago in 1878. In one of the circulars issued from St. Louis, it is stated that 'This institution was chartered by act of the legislature of Illinois, in the year A. D. 1869–70,' giving the impression that it was chartered by special act, and not under the general law. A certificate purporting to be signed by Edward Rummel, Secretary of State of Illinois, was appended to the circular, stating that 'The above institution was located on the corner of East Madison and State streets, and was destroyed by the great fire of A. D. 1871.'

"Although sanitary superintendent of the city of Chicago, I knew nothing of the existence of this university. This certificate of Rummel's had the great seal of the State of Illinois attached, and is dated August 23, 1873, and closes with an appeal 'to a liberal public to aid in placing this institution again in its former state of usefulness.'

"Dodge, in the meantime, left Chicago and went to St. Louis. He made an effort to secure a certificate from the ILLINOIS STATE BOARD, but when required to make an affidavit, he could only swear to 17 years' practice, but, in the letter of transmittal, said that *the Cleveland Medical College owed him a diploma.* No certificate was granted him, and in a very short time after, he was arrested in Randolph county for practicing without a license. He was itinerating. Upon his trial he proved that he had been practicing in this State over 10 years, and was acquitted. He made one more attempt to practice in the State about two months after, but then only remained at one place a day, fearing arrest. The trip was so unsatisfactory and unprofitable, that he has not been in the State since.

"Among the documents in the possession of the BOARD is what purports to be a 'catalogue of the officers and students of the Edinburg University, March, 1878,' and is published in St. Louis. In this it is stated that the *Chicago Northwestern College* was originally chartered in 1862, re-chartered in 1864 and 1870, its name being changed to the Edinburg University. In the fall of 1871, it is stated 'that the University, with its museum and library, was destroyed in the great conflagration of October 10.' 'The charter was afterwards submitted to the circuit court of St. Louis, and passed with but slight changes. Its capital stock was $200,000.' In the catalogue, Dodge was advertised for duty in three different chairs. It will be observed how he alludes to the Northwestern College. This is no doubt intended to deceive, as the Northwestern University is an institution of repute at Evanston, under the control of the Methodist Church. Then, again, in his list of incorporators, the names of Edwards and Hitchcock appear. Dodge claims that his letters on 'Cardiac Disease' were published in the *Northern Christian Advocate* and the *Northwestern Christian Advocate* of Chicago. I called upon Dr. Arthur Edwards in 1878, who for fourteen years was editor or assistant editor of the latter paper, who informed me that no such paper as the first named was ever published in Chicago, and that Dodge has never been, to Dr. Edwards' knowledge, a contributor to, or an advertiser in, the latter named paper. Dodge's coupling with the statements just denied the names of A. L. Edwards and H. H. Hitchcock as among his incorporators, appears to have been done with the intent to deceive, as A. Edwards, at that time, was editor, and L. Hitchcock, publisher, of the paper in which he falsely said his letters were printed."

The Compound Oxygen Fraud:

The following from the Popular Science News of May 1st, explains itself, and needs no comment:

"A physician in a western State sends us a sample of a crystalline salt obtained by evaporating a 'compound oxygen treatment,' sold in his vicinity. The directions for use are to place the solution in an inhaler, and breathe through it. The salt, upon analysis, proves to be *nitrate of ammonia*, and the 'compound oxygen' obtained by inhaling through a solution of this salt would be simply *common air*, and nothing more. Compound oxygen appears to be in unusual favor in the West at present; but it is difficult to see why the manufacturer of this particular treatment should have selected the somewhat expensive nitrate of ammonia, when common salt, sand, or even pure water would have answered his purpose equally well. There is no such substance known to chemists as compound oxygen; and the only effect of the numerous and widely advertised 'treatments,' is to produce an anæmic condition of the pocket-book, which is rarely agreeable to the patient."

Sanitary Conference:

Pursuant to a call issued by this Board, the following gentlemen, representing the health departments of their respective cities and towns, met in the Senate Chamber at the State Capitol, Springfield, May 21, 1886. Those present represented one-third of the people and thirty-six of the larger counties of the State, and are as follows:

Name.	Residence.	Official Position.
Dr. F. G. Stueber	Petersburg	President Board of Health.
Dr. G. G. Craig	Rock Island	Commissioner of Health.
H. Greenwood	Bloomington	Commissioner of Health.
Geo. Churchill	Galesburg	City Engineer.
C. J. Buchner	Gibson City	Town Trustee.
D. R. Jenks	Elgin	Chairman Health Committee.
Dr. J. M. Everett	DeKalb	Health Officer.
Dr. O. C. DeWolf	Chicago	Commissioner of Health.
Dr. E. E. Oder	Rockford	Health Officer.
Dr. B. F. Buckley	Freeport	Chairman Health Committee.
Dr. S. H. McLean	Hillsboro	Member Board of Health.
M. W. Schaefer	Belleville	City Attorney.
Dr. H. C. Wade	Braidwood	Health Officer.
F. M. Charles	Grayville	Mayor.
Dr. Thomas M. McIlvaine	Peoria	Health Officer.
Dr. J. H. Eskridge	Town of Lake	Health Officer.
Dr. R. B. Dyer	Ottawa	Health Officer.
Dr. C. D. Chalfant	Streator	President Board of Health.
Dr. Geo. N. Kreider	Springfield	Member City Board of Health.
Dr. J. H. Norris	Metropolis	Mayor.
Dr. E. Schwartz	Knoxville	Member Board of Health.
Ellis Briggs	Roodhouse	Mayor.
Dr. G. M. Foote	Galesburg	Mayor.
Dr. H. H. Deming	Pana	Member Board of Health.
Dr. J. R. Corbus	LaSalle	Health Officer.
Dr. J. B. Walker	Effingham	Health Officer.
Dr. J. L. Reat	Tuscola	Health Officer.
Dr. C. S. Laughlin	Paris	Secretary Board of Health.
Dr. E B. Montgomery	Quincy	Member Board of Health.
Dr. J. C. Westervelt	Shelbyville	Secretary Board of Health.
Dr. C. J. C. Fisher	Carlinville	Health Officer.
Dr. Cyrus Pierce	Taylorville	Member City Board of Health.
Dr. E. Rowland	Olney	Health Officer.
W. B. Dunlap	Mattoon	Mayor.
J. L. Plain	Carlinville	Mayor.
Dr. W. G. Unland	Beardstown	Health Officer.
Dr. W. R. Mackenzie	Chester	Member Board of Health.
J. L. Ozburn	Murphysboro	City Treasurer.
J. F. Schick	Mt. Pulaski	Mayor.
Dr. John H. Rauch	Springfield	Secretary State Board of Health.

The conference was called to order at 10 A. M. by the Secretary of the State Board of Health, and upon his motion, Dr. G. G. Craig, of Rock Island, was elected chairman, and Dr. Thomas M. McIlvaine, of Peoria, secretary.

Dr. Rauch stated that delegates from each locality represented would be called upon to give an account of its present sanitary status, and the methods pursued in promoting local sanitation. He then called on Dr. Oscar C. DeWolf, Health Commissioner of Chicago, to explain the sanitary work of that city. Dr. DeWolf began by emphasizing the importance of the conference. It was the first time in years that he had left his office to attend such a meeting. He then spoke of the importance of procuring full and complete vital statistics. He said the State of Illinois conferred certain privileges upon the physician, and had a legal right to demand that the reports of births and deaths be made by him. It is of the utmost importance where the inheritance of property is in doubt, independent of the sanitary question involved. There is scarcely a day that he is not called upon to certify to births and deaths for legal purposes. The importance of this subject is recognized in Chicago, and no difficulty is experienced in enforcing it. After speaking of the work of the STATE BOARD OF HEALTH, and of the great impulse it had given to sanitary work, not only in Illinois but in other States, thus practically affecting the whole country, Dr. DeWolf spoke of the sanitary inspection of Chicago. In the first place, politics were excluded from his office, and every inspector was employed upon his merits. Besides his force of inspectors he had several supervisors, who re-inspected and detected the careless work of every inspector. The discovery of three instances of careless work was sufficient to cause the discharge of the employé. While there was some opposition to the house-to-house inspection in the beginning, yet the people became reconciled to it when they found it paid.

In 1885, 77,182 buildings were inspected in the city in the house-to-house inspection; among them were 49,024 dwellings and 19,693 factories and store rooms; 55,618 nuisances were complained of and investigated, and 22,280 notices sent out to abate them. The plans and specifications of 7,268 new buildings were submitted to the Commissioner of Health for Examination; 10,960 vaults were cleaned, and a large number of cellars, drains and sewers inspected and purified. A nuisance was defined as anything that causes an annoyance. The different sorts of nuisances were defined, and the action taken in various cases was stated. The true test of sanitary work is this: Does it diminish the death rate? Its real value is gauged by the results obtained. Seven years ago the death rate in Chicago was 24 per thousand; in 1885, it was 18.15 per thousand. The health department had been instrumental in saving 5,000 lives in Chicago in 1885. There had been no wells in use in Chicago since Dr. Rauch abolished the last one in 1873. In country towns where wells are used, great attention should be given to the abatement of all nuisances, especially badly constructed privy vaults. Privies should be built entirely above ground, and be tightly cemented, fowls kept away, all surface drainage in that direction averted, and the dry-earth system be used. Speaking of disinfectants, he said, for several reasons the corrosive chloride of mercury is not adapted for general use. Copperas is largely employed for disinfecting purposes, and many persons keep a barrel of copperas solution constantly on hand, and use it freely every day. Lime and charcoal, because of their drying and absorbing powers, are excellent disinfectants. The main point in the prevention of cholera is to remove all moisture. Vaccination was next referred to, and the peculiar dangers of the introduction into Chicago of small-pox, related. Notwithstanding the fact that it has been repeatedly introduced by travelers and immigrants, there has been no spread of the disease from them in the past three years. He described the action taken when a case of small-pox was reported; and in speaking of the importance and success of vaccinating the school children, he said that during the great epidemic of 1882–1883 only six cases had occurred among 80,000 children, and these were attributable in four instances to negligence. Children should be vaccinated in infancy, again at seven years, and again at the age of puberty. In case of failure with good virus, repeated attempts should be made until it was proven that the individual is not susceptable to vaccination. Dr. DeWolf thinks that bovine virus should always be used. A practitioner should not use virus from a subject with whose history he is unacquainted, and thus run the risk of communicating disease. Dr. DeWolf was listened to with great attention, and, after concluding his remarks, was plied with questions upon subjects suggested by his address, by nearly all present. Here followed an interesting discussion on deodorants, disinfectants, germicides and vaccination.

Dr. T. M. McIlvaine, health officer of Peoria, then gave an interesting account of the trouble experienced in enforcing sanitary regulations and inspections in Peoria. The health officers in the past had been handicapped by want of money and encouragement from the city council, but there had recently been some improvement; house-to-house inspections had been made, but it had been found desirable to reduce the number of questions in the inspection blank. Sanitary inspectors were paid $65.00 per month. A great many cisterns and privy vaults had been cleaned out. Dr. McIlvaine believes in a scare, and said he had gathered all the cholera and small-pox statistics together he could find to scare the people into taking the necessary sanitary precautions. He desired to know what could be done with the slaughter-houses and soap factories, and whether a city had the right to demand that a butcher should go to a certain place to do his slaughtering. Would also like to know whether a pig-pen should be called a nuisance, and in what towns they had been abolished? Dr. McIlvaine favored the use of humanized virus for vaccination, especially in those cases in which it was desirable to secure a prompt effect.

Dr. DeWolf answered the questions propounded by Dr. McIlvaine, and read the statutes of the State bearing upon the powers of health officers, and definitions of nuisances and the abatement of the same.

A discussion followed on the question put by Dr. Reat, of Tuscola, as to the right of a corporation to declare a swamp or stagnant pond a nuisance, and to compel the owner to fill up the same.

Mr. M. W. Shaefer, City Attorney of Belleville, stated that under the general law a city council (or board of health) could declare such place a nuisance and order its abatement. Should the owner then refuse, the nuisance could be abated and the owner compelled to pay the costs. Cities organized under a peculiar charter could not do this. The location of slaughter-houses could also be controlled. The house-to-house inspection had not been instituted in Belleville as yet, but it had been a very healthy city during the past year.

Dr. E. E. Oder, of Rockford, asked whether the rendering of lard had been considered a nuisance in Chicago.

Dr. DeWolf thought, in the matter of nuisances, health officers should be bold and use their discretion. He had had 400 suits and never lost one; thought that in most cases the law would protect the officer. That although the slaughter-houses of Chicago were outside the city limits, the city had a right under the State law to have supervision of them. That rendering lard was not a nuisance if properly and neatly conducted. Slaughtering is a necessity, but should be conducted under proper sanitary supervision. That a nuisance was an annoyance, but not necessarily prejudicial to health. In fact, the 22,000 people engaged in the slaughtering and packing business in Chicago were remarkably healthy. The grounds of objection should be, not the offense to health, but rather to the sensibility.

Dr. G. N. Kreider, representing the board of health of Springfield, gave a short history of that organization. For a number of years the members had been appointed annually, but outside of meetings in cases of emergency but little had been done. Five years ago the city of Springfield was in a very filthy condition, but now, thanks to good drainage and good paving, it was an exceptionally clean place. Last year there was an inspection, but it was very unsatisfactory and there was no permanent record of what was done. This year the board had $1,500 placed at its disposal and a portion of it is now being used in making a house-to-house inspection upon the blanks furnished by the STATE BOARD OF HEALTH. The inspectors were elected by competitive examination, and the work is under the supervision of Dr. B. B. Griffith, and a special police officer has been detailed to attend the enforcement of the recommendations made by the inspectors. Dr. Kreider then spoke of his researches in Prof. Koch's laboratory in Berlin and his observations while traveling in Europe during the past year. He said that the prevalence of cholera in the Latin countries was due to lack of sanitary precautions and the ignorance of the people. England, Germany and Austria, although exposed to the disease, had prevented its introduction by proper regulations. One of the most important things necessary to prevent cholera was to avoid filthy moisture. The cholera germ rapidly becomes innocuous if dried. Those substances which absorb moisture are therefore real disinfectants.

Dr. G. G. Craig, commissioner of health of Rock Island, reported that the house-to-house inspection was being made this year. Vital statistics are quite accurately collected in this city. There was some trouble about the reporting of births, but no deaths remain unreported. Rigid quarantine was enforced in cases of contagious disease, especially diphtheria and scarlet fever. The schools had never been closed on account of diseases. Some trouble had been experienced from slaughter-houses and the killing of diseased animals. Dr. Craig thought the law of 1883 provided for filling of low swamps and ponds at the expense of the property.

Dr. B. T. Buckley, chairman of the health committee of Freeport, said that he would attend personally to the return of vital statistics from that county (Stephenson). The city council had refused to make an appropriation for the house-to-house inspection. The local board is active and efficient, and doing all they can with the means at their command. Freeport was, generally speaking, a healthy city. The main trouble is from cess-pools and privy vaults, which affect the drinking water.

Dr. J. H. Norris, mayor of Metropolis, thought, that notwithstanding the popular impression that Southern Illinois is unhealthy, it will compare favorably with other portions of the State, and that diseases resulting from improper sanitation were rare. Appropriation had not been made by the city of Metropolis for the house-to-house inspection, but he hoped it would be. He thought that inspections should be made in all cities in order that a true showing of their condition might be made to the public at large. Metropolis had been remarkably free from contagious diseases. He inquired what should be done when school boards refused to make vaccination of school children compulsory.

Dr. Rauch, in answer, said that vaccination could be enforced by city ordinance, and the school closed if the board refused to recognize the ordinance.

Dr. G. M. Foote, mayor and formerly health officer of Galesburg, said that it required "cheek" to be a health officer, and that sanitary science is a matter of education. If the school board in his city should refuse to compel the vaccination of school children, he would order the police to close the schools. He gave an account of how he became interested in sanitary work, and of his labors in regulating the sanitation of his city. The great work had been in cleaning the privy vaults. He had found that wells situated fourteen and sixteen rods away were polluted by them. All privies in Galesburg were now built above ground and managed on the dry-earth system. Success in enforcing sanitary regulations was merely a matter of determination. A thorough inspection was made last year, and Dr. Foote thinks that Galesburg is now entitled to the first premium as a well regulated and healthy town. The board of health there had supervision of the markets, and condemned decayed and unripe fruits and diseased meats.

Dr. Fischer, of Carlinville, said there was considerable opposition in his city to the house-to-house inspection, but their board of health went right on with it, with very good results; that the portions of the town which had been noted for miasmatic diseases had been much improved by drainage, and the general health promoted by the abatement of the nuisances found. Since the completion of the work, all were satisfied.

Dr. E. B. Montgomery, of Quincy, said that they had had a board of health for sixteen years, and that the reports of vital statistics had been faithful; regulations in regard to vaccination and contagious diseases had been complied with, with satisfactory results; house-to-house inspection had not been enforced, although there was room for improvement; slaughtering houses and fertilizing establishments were being removed

Dr. J. R. Corbus, of LaSalle, said that heretofore no attention had been paid to sanitation, but that now the authorities were moving and making an effort to comply with the requirements and instructions of the STATE BOARD OF HEALTH; that the general health of LaSalle was good. He favored the passage of a series of resolutions by the Conference, the object of the same being to secure concert of action upon the part of local health officers and municipal authorities, and moved that a committee of three be appointed to prepare said resolutions. The motion was carried and the Chair appointed Drs. Corbus, DeWolf and McIlvaine.

Dr. J. L. Reat, of Tuscola, said that the sanitary status of their city was generally good, but that the conditions were rather unfavorable for drainage on account of flatness, but tiling was being thoroughly done. No house-to-house inspection had been made, but the health officer had the authority to inspect every house and order the abatement of all nuisances found. He was much pleased with the reports made and the practical character of the discussions.

Dr. Ralph B. Dyer, health officer of Ottawa, said that he had the co-operation of the municipal authorities in promoting sanitary work, and he proposed to clean up the town. Also, that he would do all he could to secure the collection of vital statistics.

Dr. C. S. Laughlin, of Paris, said he was much pleased with what he had heard thus far and that their board of health would carry out the suggestions and plans of the STATE BOARD, and that a thorough house-to-house inspection would be made; that special attention would be given to the registration of births and deaths.

Dr. W. R. Mackenzie, of Chester, stated that decided improvement had been made during the past year in the sanitary condition of Chester; that a thorough house-to-house inspection had been made last year, and all the nuisances abated. A re-inspection was now going on, and the general health of the town good. Owing to the topography of the place its natural drainage was very good.

Dr. J. B. Walker, of Effingham, reported the sanitary condition of that town as bad. Regulations of the STATE BOARD OF HEALTH not carried into effect. Would do all he could to awaken an interest and get them in better shape.

Dr. T. H. McLean, of Hillsboro, reported their sanitary condition as very good; that last year the house-to-house inspection was made, and that the board of health had decided to go over the ground again.

W. B. Dunlap, Esq., Mayor of Mattoon, expressed gratification at being present; that his attention had been called to many suggestions that would assist him in the discharge of his duties from a sanitary standpoint; that they made the house-to-house inspection last year, and it would again be made with more thoroughness.

Dr. J. M. Everett, of DeKalb, made a detailed statement of the sanitary affairs of his place, stating that the general health was good, but that he thought it would be improved by more thorough sanitation through a careful house-to-house inspection.

Ellis Briggs, Esq., Mayor of Roodhouse, explained the condition of his town, and said that the house-to-house inspection would be made. He asked the Secretary whether this inspection was mandatory or not. To which the Secretary replied, that technically it was, but that the BOARD preferred that it should be regarded as advisory, feeling that it was only a question of time when its necessity would be appreciated by all municipalities.

Dr. C. D. Chalfant, of Streator, explained the practical difficulties that encompassed sanitary work at Streator. The city had grown rapidly, and owing to the large mining interests the population was mixed. Nevertheless, it was being placed in good sanitary condition.

With but few exceptions, all present participated in the discussions. Although not as fully attended as expected, the meeting and its results were more satisfactory than could have been anticipated. It was a practical, earnest working body. The meeting was called too late in the week, and many were prevented from attending for this reason, while others barely arrived before they were compelled to return. It should have been in session two days. There were entirely too many questions suggested for proper consideration in the limited time of the meeting. All were pleased, and expressed themselves in an emphatic manner of the necessity and importance of holding the Conference annually.

The committee on resolutions reported the following:

1. That to insure the proper sanitary condition, it shall be the duty of the health officers to require a prompt special inspection of all buildings and premises within the corporate limits of town, village or city, to report same to proper authorities, and to cause all nuisances to be abated as far as practicable.

2. All town, village, or city authorities should be informed touching the influence of such sanitary supervision of domiciles and places of labor, on sickness and death rates, and they are hereby requested to make a prompt and proper appropriation of means for the performance of this work.

3. The registration of births and deaths having been too greatly neglected in the past, it is urged that ordinances and rules be made by the proper authorities on this subject, both for the pro-

curing of necessary information, purposes of identification, and also to inform the sanitary authorties of the condition of the health of the neighborhood.

The importance of vaccination and re-vaccination should be impressed upon all school authorities, and the laws of the State thereon should be promptly and vigorously enforced.

This finished the business of the Conference, and the meeting then adjourned.

Public Health:

The general health of the State has been unusually good for the quarter. Scarlet fever of a mild type has been reported in the neighborhood of Venedy, Washington county; also, at Danforth, Iroquois county, and cases still occur at Peoria.

Small-pox:

At the last meeting of the Board, several cases of this disease were reported at Carmi, White county, (Geo. M. McHenry, M. D., reporter). In all there have been thirteen cases and three deaths. At Crossville and Emma, in the same county, there were twenty cases and six deaths, and seven cases and three deaths, respectively. With one exception all the cases occurred in March and April, and the disease is now exterminated. One case of varioloid was reported near El Dorado, Saline county. No further spread. At Champaign, seven cases were reported and one death, (F. G. McGranahan M. D., reporter). The disease was brought from Greenfield, Indiana, in March. The case that died had never been vaccinated. All the cases were in one house; no spread. Another group of cases are reported in Sycamore township, DeKalb county, (Chas. P. Brown, M. D., reporter). In all there were seven cases and one death. Disease was contracted on a Lloyd steamer from Bremen to New York, from a child who had small-pox on the voyage. The case that died had never been vaccinated. Another case, a Norwegian immigrant, was reported at Boone, Boone county, (Dr. D. G. Morris, Sharon, Wis., reporter); contracted the disease on steamer. Two cases of small-pox were removed from the steamer to the quarantine station at Grosse Isle, below Quebec. The patient was seen on June 2d, fourteen days after arrival in this country, and five days after she was taken sick. On the day before the eruption made its appearance she was delivered of an eight months' child, which died on June 10th, covered with well-marked small-pox; so far no spread has occurred. On June 4th, a case of varioloid was reported at Lake Forest, (Alfred C. Haven, M. D., reporter), in an immigrant from Sweden, who had arrived in New York on "The City of Chester" two weeks prior to the appearance of the eruption. *She had a certificate of vaccination from the surgeon of the steamship, although she had not been vaccinated since infancy.*

Recovery from Glanders:

Dr. C. N. Cooper, county physician of Kane county, under date of June 11, 1886, reports that "I take pleasure in informing you that I have discharged my glanders patient apparently cured, and that she is at work and able to support herself." Her husband died of the disease near Elgin about two years ago, and she contracted the disease from him. After much suffering she has now so far recovered as to be able to support herself.

Chicago Water Supply and Sewage:

The weekly examinations of the water supply, by Prof. Long, show that during the month of April it was fair, and in May and June very good, and practically without sewage contamination. From March 22 to April 12 the Bridgeport pumps were not in operation, and it is fair to assume that some of the sewage entered the lake by way of the Chicago river. Since April 12 to the present time, the pumps have been continuously in operation, thus preventing any sewage from entering the lake via the Chicago river. In April the water was turbid at three different times, while in May and June it was clear. This can, to some extent, be accounted for by the fact that the wind movement in April was 6,148 miles, in May 5,752 miles and in June 4,796 miles. The greatest movement in any one day in April was 420 miles, in May 274 miles, and in June 224 miles. But the most important factor in bringing about the good condition of the water was the unprecedentedly small rainfall during the three months under consideration, as will be seen by the following table showing the rainfall for each corresponding period during the last sixteen years:

MONTHS.	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886
April..........	3.70	3.03	6.22	2.67	2.32	2.07	2.42	5.57	1.93	5.20	1.84	6.72	3.72	3.05	4.00	1.29
May..........	3.90	3.24	7.20	2.08	3.64	1.85	1.81	5.22	3.89	4.97	1.85	5.52	7.32	1.53	3.17	.99
June.........	5.56	3.45	1.44	3.25	5.17	5.96	6.04	3.02	3.18	3.50	5.93	5.71	5.61	2.11	5.20	.94
Total......	13.16	9.72	14.86	8.00	11.13	9.88	10.27	13.81	9.00	13.67	9.62	17.95	16.65	6.69	12.37	3.22

It will be observed that only about one-third the usual amount of rain fell, and there can be no doubt but that the sewers of Chicago are now in a filthy condition, owing to the fact that they have not had a thorough flushing for the last three months, as on no one day has there more than half an inch of rain fallen.

On May 30 and June 1, I accompanied the Governor on a tour of inspection of the Illinois and Michigan canal, and the Illinois river, from Joliet to Peoria. The water in the Guard Lock at Joliet was black and offensive from Chicago sewage; this gradually disappeared until we reached the Aux Sable feeder, where the discoloration of the water was no longer perceptible, and no odor could be detected.

The Peoria hydrant water was analyzed weekly during the months of February and March, by Prof. McMurtrie, but no contamination by Chicago sewage was found. This time, however, embraced the freshet period of the year, the rainfall for January, February and March being 6.86 inches, about the usual amount that obtains at this season.

On the 21st of June, I again inspected the condition of the canal at Joliet, and found the water much more offensive than three weeks before, owing to the fact that but little rain had fallen in the territory draining into the DesPlaines river; thus the diminished quantity of water in that river had less effect in purifying the Chicago sewage.

As nearly as I can ascertain, the average amount of water pumped daily is only about 35,000 cubic feet per minute. At this time it should be from 45,000 to 50,000. It is unfortunate both for the sanitary interests of Chicago and the country along the canal, that the pumps have not the capacity they were contracted for, and it is to be hoped that they will be placed in condition to do what is required with as little delay as possible. This is specially important, as the probabilities are that a great amount of rain will fall the next six months to make up for the small amount that fell during the past six months, and that during this time the water will again become polluted.

Local Sanitation:

Much and thorough work in the way of inspection and the abatement of nuisances has been done during the past three months, and generally speaking, the cities, towns and villages of the State are in better sanitary condition than they have been for years. House-to-house inspections have been and are now being made by Rock Island, Rockford, Ottawa, Streator, Roodhouse, Mattoon, Paris, Hillsboro, Effingham, Tuscola, Sparta, Champaign and Springfield. In the latter city the work is being most thoroughly done, special attention being paid to the water supply by wells. The water of one well, about fifteen feet from the main sewer, has been examined and found to be contaminated by sewage. The inmates of the house who used the water have been more or less sick for the last three years, two cases of typhoid fever occurring among them. The water of a number of suspected wells is being examined, owing mainly to their close proximity to privies. Six wells were examined at Champaign, all very foul either from surface drainage or the contents of privy vaults.

Inspections:

I accompanied the Governor in the inspection of the Southern Insane Asylum at Anna, the Normal School building at Carbondale, and the Penitentiary at Chester. Found all the institutions in good sanitary condition.

Accompanied by Dr. T. M. McIlvaine, health officer of Peoria, I made an inspection of that city and found it on the whole in very good sanitary condition. I was also consulted with regard to a site for the proposed abattoir. The slaughtering is conducted in and about the city at 17 different places, all being more or less nuisances. It is therefore important, not alone from a strictly sanitary standpoint, but also to furnish proper facilities for the inspection of the meat supply before and after slaughter, that the abattoir be built. The collection of vital statistics is faulty and should be remedied. There is no provision made for the issuing of burial permits, although the ordinances of the city require that no one shall be buried without one. It is very important, in a city of the size of Peoria, that this requirement should be enforced, not alone from a sanitary standpoint, but also for the prevention and detection of crime.

I also, accompanied by Dr. Alfred Nash, health officer of Joliet, inspected the territory lying east of the Chicago and Alton Railroad, from the Penitentiary to the city limits, with a view of ascertaining the necessity and feasibility of constructing a sewer. I am satisfied that no greater sanitary necessity exists at Joliet than the construction of this sewer.

Asiatic Cholera:

Early in April the reappearance of cholera was reported in Brittany in and near Treboul. On the 15th of the same month it was admitted that sporadic cholera had appeared at Brindisi, and that the Egyptian authorities had subjected all arrivals at Alexandria from Brindisi to seven days' quarantine. The Austro-Hungarian Government also, in view of the unsatisfactory state of Venice, ordered seven days' quarantine for all goods from Italy; and the sanitary board of Rome has ordered seven days' quarantine at all Italian ports as regards arrivals from the Adriatic coast.

The authorities of Naples have taken special precaution, by way of cleaning and otherwise, to prevent a recurrence of the disease; while the inhabitants of Sicily are claiming protection through a rigid system of quarantine.

On May 5th ten cases of cholera with three deaths were reported in Venice, and it is believed that cases had occurred there before. The disease has extended inland to Vicenza (an important town on the line of the railroad connecting Venice and Verona), where nine cases were reported May 4th and two additional cases on the 5th. It is also reported that Italian sailors have introduced the disease into Salonica. For the week ending May 12th, 52 fresh cases and 18 deaths were reported in the town and province of Brindisi. The disease has extended about 70 miles up the Adriatic Coast to the port town of Bari, where 61 cases and 21 deaths were reported on May 9th and 10th; and at Venice 63 cases and 25 deaths occurred during the week, and 28 deaths for the week ending May 18; and at Bari 79 cases with 32 deaths. On May 25th 2 deaths occurred at Udim, a place on the Austrian frontier, situated at the junction of two lines of railroads leading to Venice. Between May 27th and June 1st fatal attacks, varying in number from 12 to 21, occurred day by day in Venice, amounting in all to 89.

The latest reliable intelligence from Europe indicates that cholera is still confined to Italy, the fatal cases occurring between May 1 and June 7 numbering 266. The news from Bari, though not so serious in character, yet showed a steady continuance of the disease, with few, if any, days without one or more fatal cases, which, counting from its commencement to this time, numbers upwards of seventy-eight.

In Venice, for the week ending June 14, the daily attacks have varied between five and twenty-one, and the total cholera deaths for the week were fifty-seven. Several attacks have taken place in Florence, but it is said that they were the result of importation from Venice. During the same time eleven deaths occurred at Bari. No information with regard to the number of cases at Brindisi has been received, but the town is still infected. Oria, an inland town in railway communication with Brindisi, has also been affected, and on June 12 and 13 two fatal attacks occurred at Trieste, in different parts of the town.

From the foregoing it will be seen that the disease is gradually spreading, and is prevalent in various parts of the kingdom, and its maintained persistence in one or two places at the two extremes of the peninsula must still be regarded as giving ample grounds for anxiety for the future.

For the last two weeks no intelligence has been received in this country concerning the cholera in Italy.* This may be due to a diminution in the outbreaks, owing to measures taken to prevent its spread; or to the fear that the imposition of quarantine measures will prevent travelers from visiting certain parts of Italy as usual. The latter might be an inducement to prevent, as far as possible, the publication of the real situation. Should, however, the disease remain under control a month longer (July) as well as it apparently has thus far, but little apprehension need be felt of its finding a lodgment on this continent during the present season, though it would still be unsafe to discontinue the precautionary measures now being prosecuted. In fact there is danger to this country as long as there is a case of cholera on the continent of Europe.

Vital Statistics:

During the quarter 896 letters were written with regard to the returns of births and deaths, and the responses were generally satisfactory. In a number of towns and cities the burial permit system has been commenced, and among them Springfield, where it is working very satisfactorily. So far the county clerks of 98 counties have sent their returns of marriages, births and deaths for 1885. As a rule, they are an improvement over the returns for 1884. This is specially marked in the return from Cook county. I have inspected the offices of the county clerks of Peoria, Union and Jackson counties, and find the registration records well kept. These inspections of the offices of the county clerks will continue to be made as rapidly as possible.

JOHN H. RAUCH, Secretary.

---

* Since this report was written, the increase and spread of the disease at Brindisi and neighborhood has been announced; also, that four points in Austro-Hungary have been infected, causing panic; especially at Fiume.

On motion, the report of the Secretary was received and ordered printed in the published proceedings of the BOARD.

At 4 P. M. the BOARD adjourned until 8 P. M., at which hour the BOARD reconvened, pursuant to adjournment. The usual routine business was transacted, including the auditing of bills for the quarter, amounting to $2,785.30.

At 10 P. M. the BOARD adjourned to Wednesday morning.

WEDNESDAY, June 30, 9 A. M.—The BOARD met, pursuant to adjournment from Tuesday night; present as before.

On motion of Dr. Kreider, the following preamble and resolution were adopted, to-wit:

> WHEREAS, Satisfactory evidence has been presented to this BOARD that John Wm. Heath, holding Certificate No. 4241, has fraudulently and with intent to deceive used the names of the members of this BOARD in a certain advertising circular, also therein making claims to the most wonderful skill in the treatment of disease not warranted by the facts;
>
> *Therefore be it Resolved*, That Certificate 4241, issued June 11, 1879, to the said John Wm. Heath be and is hereby revoked for "unprofessional and dishonorable conduct."

On motion of Dr. Mackenzie, the Secretary was authorized to act for the BOARD in any case of emergency arising in the interims of the meetings.

The remainder of the session was devoted to the consideration of cases under the Medical-Practice Act.

Adjourned.

QUARTERLY MEETING, CHICAGO, OCTOBER, 1886.

The regular quarterly meeting of the ILLINOIS STATE BOARD OF HEALTH was held at the Grand Pacific Hotel, in the city of Chicago, October 28 and 29, 1886. Present, Thursday, October 28: Newton Bateman, A. L. Clark, R. Ludlam, W. A. Haskell and John H. Rauch—the President, Newton Bateman, in the Chair.

The BOARD was called to order at 11 o'clock A. M., and after the call of the roll, the minutes of the last meeting, June 29 and 30, 1886, were read and approved. The regular order of business was dispensed with, and the reading of the Secretary's quarterly report was deferred until the afternoon session. The remainder of the morning session was consumed in the transaction of routine business, and at 12:30 o'clock the BOARD adjourned until 2:30 P. M.

At 2:30 P. M. the BOARD re-convened. In addition to the members of the BOARD there were present at this session Drs. C. N. Hewitt and Perry H. Millard, of the Minnesota State Board of Medical Examiners, and Drs. W. S. Robertson and J. F. Kennedy, of the Iowa State Board of Medical Examiners. The Board temporarily resolved itself into a

CONFERENCE OF STATE BOARDS OF MEDICAL EXAMINERS.

Drs. Millard and Hewitt reported on the status and progress of the work regulating the practice of medicine in Minnesota, the results, as set forth by these gentlemen being in the main very satisfactory.

Drs. Robertson and Kennedy detailed the experiences and results of the work of the Iowa Board for the three months of its existence, showing that in so short a time much good had already been accomplished.

Dr. Millard suggested the advisability of not recognizing as in good standing medical colleges which do not require a three years' graded course of lectures. After considerable discussion a committee was appointed, composed of the Secretaries of the Missouri, Minnesota, Iowa, West Virginia and Illinois Boards, whose duty it shall be to meet in the coming spring, at the call of the Secretary of the ILLINOIS STATE BOARD OF HEALTH, at such time and place as he may designate, for the purpose of conference and to secure as complete unity of action as possible, in order to carry out the objects for which the medical laws in these States were enacted. The results of the conference were regarded by the participants as very satisfactory and likely to be productive of much good.

The BOARD then resumed the transaction of its regular business, and first considered the status of ——————— Medical College, charges against the same having been filed in the office of the BOARD. The Dean of the College was present, and by documentary and other evidence refuted the charges, at the same time claiming that the school had in every respect carried out the schedule of minimum requirements establishing the good standing of medical colleges before this BOARD.

The Secretary presented the following

QUARTERLY REPORT OF THE SECRETARY.

During the quarter ended September 30, 1886, there were received in the Secretary's office 1,269 written communications, exclusive of the diplomas submitted for verification, affidavits, letters of recommendation, etc., pertaining to 101 applications for certificates entitling to practice medicine, and to 29 applications from midwives. There were sent out during the same period 868 letters, 165 copies of Annual Reports, Official Registers, and Reports on Medical Education and about the usual number of other publications — Preventable Disease Circulars, Epidemic Disease Blanks and Instructions, Public Health Laws and Sanitary Memoranda, Medical-Practice Act Instructions, etc.

Certificates and Licenses:

In response to the 101 applications, 62 certificates were issued on diplomas of colleges which conform to the standard of minimum requirements; 6 to graduates of other colleges, and who were required to supplement their diplomas by passing examinations in the subject or branch omitted by their colleges; 2 to doctors upon proof of more than 19 years' practice in Illinois, and 2 duplicates. Of the remainder, 13 applications were rejected because of failure to comply with the law, and 14 are still pending.

Certificates were also issued to 14 midwives, licentiates of recognized schools; to 7 upon proof of more than 19 years' practice in the State; and to 6 out of 8 non-graduates on examination—two of these being rejected.

Public Health:

The same generally satisfactory condition of the public health, noted at the close of the last quarter, has obtained since. There has not been the usual increase of the seasonal diseases, although the remarkably dry weather has been prejudicial through its effect on the water supplies. This effect has been most marked in places where the conditions favored water pollution, and is manifested in an undue prevalence of typhoid fever in some localities throughout the State. The disease, however, has at no time reached an epidemic extent, nor has it been marked by unusual severity or mortality.

The results of the continued prosecution of the sanitary work, begun by the BOARD in 1883 in anticipation of Asiatic cholera, still further emphasize the importance of protecting and improving the water supplies of cities, towns and villages, and even of isolated dwellings. Many cases of water pollution hitherto unsuspected—notwithstanding the frequent illnesses of those using the water—have been revealed by the house-to-house inspections and the conditions thence disclosed. Analyses of waters thus brought under suspicion have frequently led to examinations which resulted in discovering sewage and other contamination. No more important sanitary duty now devolves upon the BOARD than this.

Diphtheria has appeared at several places, and at Streator and vicinity proved quite fatal. A mild type of scarlet fever still continues to occur. There is no small-pox in the State, and with the exceptions noted, the quarter has been unusually healthy.

Food Poisoning:

Two cases of alleged food-poisoning have been investigated, one at Coulterville, Randolph county, affecting sixty persons, with two deaths; the other at Charleston, Coles county, affecting about twenty persons, but with no fatal results. Unlike the Momence beef-poisoning cases there seems to be no reason for seeking other than the very obvious causes reported by the inspector of the BOARD. At Charleston the sickness was attributed to lemon sherbet served to a large number of persons at a social gathering, and at Coulterville to ice cream served at a Fourth-of-July celebration to some 300 persons. The flavoring extracts used at both were subjected to chemical analysis without detecting anything deleterious. The new alkaloid, tyrotoxicon, is also excluded from the probable causes by the conditions which obtained at Coulterville. There seems to be no reason for dissenting from the conclusions reached by the inspector, Dr. J. H. Utley, the substance of whose reports is herewith submitted.

On the third of July a celebration was held at Coulterville, Randolph county, which was followed by a picnic, at which the ice cream in question was served and eaten, probably, by at least three hundred people. Of this number about sixty were taken sick the next day with pain in the head and back and, in the majority of cases, colic with diarrhœa and vomiting. These symptoms did not come on till from eighteen to twenty-four hours after eating the ice cream: in fact many attended church on the next day, Sunday, and were taken sick after the service.

Not all of the cases were equally severe; a great many did not go to bed at all. Those whose health was already deranged from any cause suffered more than the more robust persons. One very strong coal miner admitted having eaten seven dishes of the cream and was not made sick by it. In a family of four, three were taken down; of these three one had not eaten any of the cream, while one who had partaken of it freely was unaffected. On the other hand, a group of fifteen who had eaten together were all more or less sick.

On Sunday night two young children died, aged respectively three and five years. Both had eaten more or less cream on the day before. The symptoms in these cases, as related by the attending physician, resembled those of acute meningitis, which was by him stated to be the cause of their death.

There were two lots of ice cream made; one of eight gallons, which was all consumed during the afternoon; and another of four gallons, consumed during the evening. The two lots were made by two different women whose characters are above reproach. The milk and eggs were obtained from different sources in and about the village. The extract (lemon) used for flavoring was manufactured in St. Louis. An inspection of the freezers failed to reveal any thing out of the way. There was no difference in the cream that could be discovered. Of those who were sick some had eaten from one lot and some from the other.

In conclusion, it appears that the ice cream was freshly made and there is no evidence that it was poisonous; of the large number who partook of it, but a portion were afterwards taken sick. The extreme heat—the thermometer stood at 95° in the shade—combined with the unusual excitement followed by indulgence in such a diet, would seem to be fully competent to account for the sickness without calling in the aid of a special poison.

Owing to the fact that a very strong feeling had been developed in the village, it proved to be a more difficult matter than usual to obtain plain facts without the color of prejudice.

In this connection reference may be made to the eighty cases of poisoning from milk at Long Branch, N. J., investigated by Drs. Newton and Wallace, of the New Jersey State Board of Health. In their report, published in the Medical News of September 25, 1886, they state that, "From one to four hours elapsed between the meal and the first symptoms. The symptoms noticed were those of gastro-intestinal irritation, similar to poisoning by any irritating material, that is, nausea, vomiting, cramps and collapse; a few had diarrhœa. Dryness of the throat and a burning sensation in the œsophagus were prominent symptoms." * * * "Further inquiry revealed the fact that all who had been taken ill had used milk in greater or less quantities, and that persons who had not partaken of milk escaped entirely. Finally chemical analysis proved the presence of a ptomaine (tyrotoxicon) in the milk that had caused the trouble."

These facts correspond with what was observed at Momence by Dr. Keyser in the cases of poisoning from ptomaines at that place about a year ago, while they differ from those at Coulterville in some very important particulars. The symptoms did not appear in the cases at the latter place as soon by fourteen hours or more; diarrhœa was a more prominent symptom than vomiting; dryness of the throat and burning pain in the œsophagus were absent; not all were made sick by eating the cream; some were sick in the same manner who had eaten no cream; and finally the two lots of cream were made from milk derived from entirely different sources. Yet the proportion of the sick was the same in those who had partaken of either lot.

Asiatic Cholera:

A review of the quarter shows that Asiatic cholera has by no means lost its interest for this country. During July, although there was in the last two weeks a diminution in the number of cases in Italy, the area of distribution of the disease increased both in Italy and along the Austrian coast of the Adriatic. Cases appeared at Fiume during the first week, and there were rumors of its appearance in villages in Hungary at the close of the month. In August similar conditions prevailed in Italy, and there were signs that the disease had about exhausted the material in the peninsular, especially in the northern part. Although new places continued to be infected the number of cases diminished. It still prevailed at Fiume, and had spread to several places in Istria and to a number of Croatian villages. Up to September 14 there had been reported 45,000 cases and 14,000 deaths in Italy, and there were still occurring new points of infection. There was a marked increase of the disease in the neighborhood of Trieste; it had extended to Pesth; and its rapid spread in Croatia and invasion of new territory in the Austro-Hungarian empire, pointed to a probable prolongation of the visitation into 1887. At the close of the quarter the disease was diminishing in Italy, its fatal attacks being limited to the southern part of the kingdom, especially around the Bay of Naples. It was extending in the Austro-Hungarian Empire; was still fatally prevalent at Trieste and Pesth, although apparently diminishing; while at Szegedin there was an increase both in the number of cases and in the mortality.

Secretary's Inspections:

During the quarter, visits have been made to Champaign and Bloomington in connection with the water supplies of those towns; to Rock Island concerning its new abattoir system; to Streator on account of the diphtheria outbreak; to Rockford and Ottawa in connection with sanitary surveys and general sanitary conditions; and to several county seats, including those above mentioned, concerning the registration of vital statistics. Joliet and Streator have adopted the burial-permit ordinance of the Board, and the results of its increasing adoption and enforcement are already visible in the mortality returns.

In Memoriam:

In the death of Dr. Robert C. Hamill and of Mr. E. S. Chesbrough, sanitary science and preventive medicine have sustained a serious loss. Dr. Hamill was especially interested in the hygiene of infant and child life; but all wise measures for the betterment of the lot of humanity found in him a warm friend and earnest advocate. Mr. Chesbrough was one of the foremost sanitary engineers of his time, and his works are enduring monuments to his skill and genius. Both physician and engineer were endeared to hosts of friends by their personal attributes, not less than by their professional attainments.

Respectfully submitted,

JOHN H. RAUCH, Secretary.

On motion, the report was received and ordered printed in the published proceedings of the BOARD.

On motion of Dr. Haskell, the reception of the Secretary's report on the Water Supply and Sewage Disposal of Chicago was made the special order for the Friday morning session.

The expenditures for the quarter were audited and bills amounting to $3,206.21 were approved and ordered paid.

The BOARD then adjourned to 10 A. M. Friday.

FRIDAY, 10 A. M.—The BOARD met, pursuant to adjournment. Present, as before, excepting Dr. Haskell.

On motion, it was decided to recognize the diplomas of —— Medical College, provided the faculty strictly adhere to the requirements of the BOARD.

The Secretary then read the following:

REPORT ON THE WATER-SUPPLY AND SEWAGE-DISPOSAL OF CHICAGO.

BY JOHN H. RAUCH, M. D., SECRETARY ILLINOIS STATE BOARD OF HEALTH.

In continuance of the study of the disposal of Chicago sewage with reference to the sanitary questions involved in the condition of the Chicago river and the Illinois and Michigan canal, to the water supply of Chicago and suburban towns, and to the potability of the water of the Illinois river—a subject which has received the personal and official attention of the writer during the past twenty years—a series of systematic observations has been recently made, which, owing to the remarkable meteorological conditions that have obtained, covers an unusually interesting and instructive period. These observations embrace:

First—A chemical examination of the water drawn from the hydrant in the laboratory of the college building at Twenty-sixth street and Prairie avenue, and which examination was made on Saturday of each week, beginning September 5, 1885, and continued until August 28, 1886.

Second—A daily record of the changes in the lake level.

Third—A similar record of the level of water in the canal lock at Bridgeport.

Fourth—A daily record of the meteorological conditions—temperature, rainfall, wind movement and direction. The latter observations are recorded from July 17, 1885, to September 30, 1886, inclusive.

Supplementing the above are similar data, so far as applicable, concerning the water supplies of Lake View, Hyde Park and Evanston. Chemical examinations were made weekly, beginning December 5, 1885, for the Lake View and Hyde Park waters, and beginning December 26, 1885, for the Evanston water, and continued until April 10, 1886.

Similar chemical examinations were also made of samples of canal water collected at Bridgeport and Lockport, of canal and Des Plaines river water at Joliet, and of Illinois river water at Ottawa and Peoria, with a view of determining the rate of oxidation of sewage and the consequent purification of the contents of the canal. These examinations were begun June 26, and continued until August 28 inclusive, for all of these five points, and samples from Lockport and Ottawa were also examined September 4.

A total of 152 chemical examinations were made, and 880 water measurements and 1,760 meteorological observations were recorded during this period. The chemical examinations were made by Prof. J. H. Long, of the Chicago Medical College, the chemist of the BOARD; the data of the canal and river measurements were furnished by Mr. William Cook, canal inspector; those of the meteorological observations by the signal officers of the Chicago station; and the waters were collected by Mr. William Cook, at Bridgeport, before pumping; Capt. J. M. Leighton, superintendent of the canal, at Lockport; Dr. Alfred Nash, health officer, at Joliet; Dr. R. B. Dyer, health officer, at Ottawa; and Dr. Thomas M. McIlvaine, health officer, at Peoria.

Tables have been collated from these data, exhibiting in detail the relations of the various conditions to the quality of the water supply of Chicago and the three suburban towns mentioned, and the rate of purification of the water in the canal and Illinois river, as affecting the towns between Chicago and Peoria.

CHARACTER OF THE CHICAGO WATER SUPPLY, SEPTEMBER, 1885, TO AUGUST, 1886, INCLUSIVE.

A brief description of the conditions existing at the date when these observations were begun is necessary to a clear understanding of the tables which follow. During the month of August, 1885, following a month drier by one-third than the average, there was a rainfall of over 11¼ inches, an amount nearly four times greater than the average, and more than twice as much as any previous August rainfall on record in Chicago.

On August 2, nearly six inches of rain fell, and the Des Plaines river poured through the Ogden-Wentworth ditch into the south branch of the Chicago river, flushing the entire contents of the river and branches—unusually foul from the sewer accumulations during the previous dry weather—and the concentrated filth of the south fork, out into the lake. The pumps at Bridgeport were suspended on the 3d but resumed operation on the 4th, and continued until the 11th, when, it being obvious that they were simply lifting Des Plaines water, which if unimpeded would flow by gravity down the canal, the pumps were stopped and the gates opened, making the level in the canal and river the same. Meanwhile the sewage product of the city was accumulating in the river, owing to the high lake level, and, combined with the high temperature, there resulted a more offensive condition than had obtained at any time since the "deep cut" was completed. On the 14th, although the Des Plaines continued to pour in through the broken dam of the Ogden-Wentworth ditch, the pumps were again started and, with the entire plant pushed to its utmost, succeeded on the 17th in raising the level in the canal twenty-six inches above the river; and this, with the reducing flow from the Des Plaines, produced a sensible improvement in the condition of the main river and south branch, which continued until the heavy rain of August 24–25, nearly four inches. This again flushed out the south fork and, with the Des Plaines torrent taxing the full capacity of the canal, the filth of the south fork and the contents of the river were again poured into the lake. The pumps were stopped on the 27th, not resuming until September 4. At this time the flow from the Des Plaines river into the south branch through the Ogden-Wentworth ditch was practically unimpeded,* and this flow impaired, by so much, the effect of the Bridgeport pumps upon the condition of the Chicago river.

On September 5, 1885, the first of the weekly chemical examinations of the Chicago water supply was made, and the following table exhibits the chemical determination of the sample drawn from the hydrant on each of the dates specified; and, for the week preceding each date, the mean stage of the water in the river at the Bridgeport pumping station—for convenience termed the "lake level;" the mean stage of water in the canal lock at the same point;† the mean difference between these stages—which indicates, approximately, the amount of work performed by the pumps; the total precipitation—rain or snow; the mean temperature; the total wind movement, and the prevailing direction of the wind.

---

*The restoration of the dam, which had also been urged by the Board since August, 1883, was not completed until November, 1885.

†These measurements, both for river and canal, are taken with the floor of the old lock as a basis—this being 6 feet 6 inches below datum. This preserves uniformity in all these measurements, and enables comparisons to be made between these observations, and those of former reports. To find the lake or river level with reference to datum, subtract 6 feet 6 inches from the figures in the column "Lake."

Week ending.		Chemical Determinations.			Physical Condition.	Mean Levels of Water in				Mean Difference ...	Rainfall ...	Temperature	Wind Movement.	
		Free Ammon.	Alb. Ammon.	Oxyg used.		Lake.		Canal.					Miles ...	Prevailing direction.
		In 1,000,000 parts.				Ft.	In.	Ft.	In.	In.	In.	°F.		
1885.														
Sept.	5	.0090	.070	.40	Clear	9	11	10	2	3	.10	58.7	771	n.
	12	.0220	.100	.80	Turbid	10	2	10	11	9	1.92	61 2	1498	sw.
	19	.0000	.080	.64	Clear	10	3	10	3	0	.93	66.8	1342	w.
	26	.0110	.092	1.68	Slightly turbid......	9	11	10	6	7	.00	66.2	1495	sw.
Oct.	3	.0030	.090	.96	Slightly turbid	10	2	11	7	17	.30	63.7	1131	n.
	10	.0032	.072	.24	“ “	9	10	11	8	22	.37	48.2	1130	nw.
	17	.0036	.084	.32	Clear	9	11	11	7	20	.63	56.	1266	sw.
	24	.0052	.070	.64	Turbid	9	11	12	5	30	2.24	47.3	1516	sw.
	31	.0060	.076	1.60	“	10	0	11	8	20	.35	48.1	1618	n.
Nov.	7	.0056	.081	1.68	Turbid	9	9	11	8	23	1.78	45.3	1574	nw.
	14	.0044	.078	1.44	“	9	4	9	4	0	.01	42.5	1723	w.
	21	.0050	.070	3.04	Very turbid.........	9	6	9	6	0	.18	42.2	1241	sw.
	28	.0038	.066	2.74	“ “	9	9	9	10	1	.36	51.9	1404	nw.
Dec.	5	.0030	.082	2.48	Very turbid.........	9	1	11	1	24	.07	36.1	1486	sw.
	12	.0052	.088	2.40	“ “	9	1	11	5	28	2.08	20.2	1691	sw.
	19	.0048	.086	1.76	“ “	8	10	12	0	38	.67	24.5	1371	sw.
	26	.0060	.096	2.08	“ “	9	5	12	0	31	.12	37.6	1503	sw.
1886.														
Jan.	2	.016	.086	1.36	Turbid	9	3	11	9	30	.41	40.3	1215	s.
	9	.011	.088	1.40	“	10	0	12	3	27	.98	25.4	1967	nw.
	16	.0212	.106	1.60	“	9	5	12	4	35	.80	15.8	1967	w.
	23	.0266	.082	1.40	Slightly turbid.....	9	4	12	5	37	1.18	13.5	1553	sw.
	30	.0132	.090	1.12	Steadily improving.	9	4	12	9	41	.45	26.0	1505	nw.
Feb.	6	.0080	.076	1.08	Clear	9	4	12	10	42	.07	10.0	1526	sw.
	13	.0084	.080	1.44	“	9	9	10	11	14	.61	42.4	1404	se.
	20	.0266	.086	1.52	Slightly turbid......	9	8	10	5	9	.21	27.5	1849	sw.
	27	.0270	.076	2.40	“ “	9	6	11	1	19	.42	29.6	1991	s.
Mar.	6	.0040	.072	.96	Clear	9	7	12	4	33	.01	26.8	1427	nw.
	13	.0060	.072	.80	“	9	5	11	10	29	.31	30.7	1596	sw.
	20	.0040	.070	1.12	“	9	9	12	0	27	.46	43.7	1373	n.
	27	.0050	.080	1.76	Slightly turbid......	10	2	10	5	3	.17	38.8	1808	nw.
April	3	.0020	.084	1.76	Turbid	9	11	9	11	0	.89	33.3	1778	sw.
	10	.0030	.076	2.08	“	9	10	9	10	0	.00	40.4	1600	nw.
	17	.0048	.076	1.04	“	10	0	11	1	13	.57	54.3	1231	se.
	24	.0050	.080	.96	“	9	11	11	8	21	.00	58.2	1208	sw.
May	1	.0000	.070	.88	Good................	10	2	11	10	20	.67	51.2	1558	sw.
	8	.0000	.072	.80	Clear................	10	3	11	9	18	.11	54.8	1344	ne.
	15	.0020	.074	24	“	10	5	12	5	24	.83	55.6	1297	se.
	22	.0040	.070	24	“	10	5	11	11	18	.04	58.9	1155	sw.
	29	.0000	.064	1.20	“	10	3	11	9	18	.01	60.1	1428	sw.
June	5	.0000	.070	1.04	Clear.	10	5	11	9	16	.10	61.1	1242	ne.
	12	.0000	.068	1.12	“	10	3	11	8	17	.00	62.3	1151	ne.
	19	.0000	.068	1.28	“	10	3	11	8	17	.77	70.7	1141	se.
	26	.0020	.066	1.20	“	10	4	11	8	16	.07	66.1	0008	se.
July	3	.0000	.066	1.44	Clear	10	5	11	8	15	.00	68.4	1121	ne.
	10	.0020	.072	1.12	Slightly turbid......	10	2	11	8	18	.21	73.9	1274	ne.
	17	.0030	.060	1.44	“ “	10	5	11	9	16	.61	68.2	1421	n.
	24	.0050	.072	1.28	“ “	10	3	11	8	17	.56	68 2	1119	ne.
	31	.0036	.068	1.44	Clear	10	1	11	8	19	.15	75.0	1259	ne.
Aug.	7	.0034	.066	1.52	Clear	10	1	11	8	19	.15	69.6	1043	ne.
	14	.0020	.064	.72	Nearly clear	9	9	11	7	22	.38	74.9	1293	s.
	21	.0020	.070	.88	Clear	10	0	11	9	21	1.07	73.2	1319	ne.
	28	.0000	.074	.96	“	10	1	11	10	20	.68	74.3	1270	e.

NOTES ON THE FOREGOING TABLE.

September—The first September examination, as well as the observations for the entire month, served to illustrate the effect of the wind movement. On the day of observation, September 5, a current was still setting out of the Chicago river into the lake as a result of the heavy August rains, and the pumps were operating on Des Plaines water; but a wind movement from the north of 164 miles, or about seven miles an hour, carried this current southward along the city front and away from the inlet at the crib. September 12 the organic pollution was more than twice as great, due to a south wind of 11.5 miles per hour, and a heavy rain (1.65 inches) on the 8th. September 19, water quite good, with northeast and east winds. September 26, pollution again marked, following 72 hours of southwest winds, averaging 9 miles per hour.

During this period, the pumps were operated 13 days, maintaining an average difference of 15 inches between the 4th and 9th, and between the 24th and 30th. This factor, however, was eliminated from consideration, since the flow from the Des Plaines river was more than equal to the capacity of the pumps, and during 17 days was so great that the pumps were stopped, and the gates between the river and canal were thrown open.

October and November—During October and up to the 7th of November, the pumps were operated continuously, maintaining an average of 22 inches between the river and canal levels. They were stopped on the 8th of November and did not resume again until the 28th, and although the Ogden-Wentworth dam had been rebuilt in the meantime and the water from the Des Plaines was thus excluded, there was little change in the character of the water-supply.

On several occasions during these months the microscope revealed evidences of pollution by distillery refuse—either from the north branch, through the Fullerton avenue conduit, or from the dump-boats discharging into the lake; and, as the season advanced, the increased wind movement acted more effectively on the lowering lake to stir up sludge and other deposits along or near the shore. On the 21st and 28th of November the analyst's figures indicated the maximum of pollution thus far reached.

December—The pumps were operated continuously during this month, maintaining an average of 31 inches higher in the canal than in the river. The falling lake level, and the stormy weather which stirred up the shore deposits, snow-falls carrying down free ammonia from the atmosphere, the low temperature and ice formation retarding oxidation—the latter by excluding light and air and impeding motion—sufficiently account for the turbidity of the water and the unsatisfactory chemical determinations.

January—Similar conditions obtained during this month, the canal level being maintained at an average of 36 inches above the river. The volume of water removed from the latter, however, is not to be estimated by this, since the flow through the canal was greatly lessened by ice formation from the 4th to the 15th, and by ice gorges between the 8th and 13th—the obstructed flow continuing throughout the month.

On the whole the water was fairly good throughout January as compared with its condition in the same month of late years. The notable exceptions were on the 16th, resulting from a thaw, and on the 23d, probably owing to oxidation being retarded by the ice extension from the shore during the severely cold weather of the 22d and 23d—the latter the coldest day of the winter. On these occasions the chemical examinations showed a condition as bad as in September, but this was of short duration, and at no time did the oxygen-consumed figures rise as high as they were between the middle of November and the last of December.

February—The effect of the constant operation of the pumps began to be manifest about the close of January, and the first two February examinations showed a better condition of the water than at any time from January 9th. About the 7th of the month thawing weather set in with light rain falls, but its effects were checked by the low temperature of the 14th, 15th and 16th, before any results were manifest in the character of the water supply. Meantime the overflow of the Des Plaines—caused by the melting snow and ice on its water shed--rendered the pumps useless, and they were suspended from the 9th to the 12th inclusive, with a consequent increase of foulness of the river and its branches. Pumping was resumed on the 13th and continued on the 14th and 15th, when it was again suspended and the thaw of the 17th and 18th carried a current of melted snow and ice, polluted by the winter's accumulations, from the watersheds of the north branch and Des Plaines, together with the contents of the sewers, out into the lake. This current was also increased in velocity by the lowered level of the lake, which during the seven days preceding the examination, fell from 10 feet 6 inches to 9 feet 4 inches as measured at the pumping station. The combined effect of these various causes, to which was added the shore drainage both from the thaw and from the sewers which discharge directly into the lake, was manifested in the chemical determinations, the free-ammonia figures being higher than at any time during the previous seven months. Pumping was resumed on the 23d, and with the subsidence of the Des Plaines this began to be effective on the contents of the south branch and the character of the water steadily improved after the 27th, on which date the maximum of organic impurity seems to have been reached.

March—Up to the 20th of this month the chemical determinations of the water show it to be in good condition, and the microscope failed to detect any suspicious organic forms. The pumps were continuously operated during the first three weeks, maintaining an average elevation of 30 inches in the canal, although this was not yet free from ice. The rainfall was very light—only about three-fourths of an inch during this period—and there was little overflow from the Des Plaines, so that the pumps were effective upon the Chicago river, in which they maintained a tolerably constant current from the lake. On the 22d, their operation was suspended, and the effect was at once shown—all other conditions remaining the same—in an increase of organic matter in the water supply.

April—Rough, windy weather prevailed throughout the month, and the pumps did not resume until the 13th. Fortunately two conditions obtained to offset the suspension of the pumps during this period: First, a very light rainfall—less than one-third of an inch; Second, a prevalence of north and east winds, which, with a rising lake level, blew 6 inches of lake water into the river between the 1st and 4th, and maintained an average of more than 2 inches during the twelve days, so that on the whole—while the contents of the river and its branches grew more foul from the accumulation of sewage—the water supply remained fairly good, although showing some increase of organic impurity. On the 13th the pumps were again started, and the chemical examinations of the 17th and 24th show an improvement.

May-August—From the 1st of February to the 31st of July, 1886, inclusive, comprises a period without parallel in the records of meteorological observations in Chicago. For the fifteen years previous the average rainfall for that period was 20.73 inches. During 1886, there was only 8.05 inches of rain. In May there was .99 of an inch, as against a mean of 3.81 inches; in June .94 of an inch, as against a mean of 4.34 inches; and in July 1.53 inches, as against a mean of 3.84 inches. During this time, and up to the 9th of July, when nearly one-fourth of an inch of rain fell, the water-supply of Chicago was unexceptionable. The Bridgeport pumps were continuously operated, maintaining an average of about 18 inches in the canal above the river until the close of the observations; and since the rainfall up to August 16th was practically *nil*, so far as it affected the volume of water in the canal, it is obvious that the stage of water in the canal represents the quantity drawn from the Chicago river. The lake level was high, the mean stage in the river at Bridgeport being 10 feet 4 inches for May and June, 10 feet 3 inches for July, and 10 feet for August; and the extremes being for May, 10 feet on the 3d, 28th and 29th, and 11 feet 2 inches on the 17th; for June, 10 feet on the 3d, 4th and 6th, and 11 feet 5 inches on the 1st; for July, 9 feet 11 inches on the 28th and 29th, and 10 feet 8 inches on the 13th, 14th and 17th; and for August, 9 feet 8 inches on the 9th, 10th and 12th, and 10 feet 3 inches on the 23d and 24th.

These fluctuations play a very important part as affecting both the character of the water-supply and the condition of the river. For example, the fall from 11 feet 5 inches on June 1, to 10 feet on the 3d, 4th and 5th, resulted in the discharge into the river of an immense volume of foulness from the south fork and the slips and docks, where it had been pent up while the lake was high. As the lake and river fell this accumulation ran out into the stream, and would have ultimately found its way into the lake had not the action of the pumps counteracted such a tendency to the extent of the amount lifted into the canal.

A slight increase of turbidity followed the rainfall of the 9th of July and a 2-inch lowering of the lake level, and this was also noticed to a little greater extent on the 17th, after a two-thirds of an inch of rain on the 13th, and a 6-inch fall of the lake level. This turbidity at no time approached the line of impurity affecting the potability of the water, and toward the end of July and throughout August the water-supply was as pure as during the months of May and June.

The observations of these four months demonstrate that the sewage of Chicago can be prevented from polluting its water supply, and that when this is done the city has the best supply, all things taken into consideration, of any large city on the continent, if not in the world.

In the following table are grouped for facility of comparison the means of the chemical determinations for each month, together with means of water levels in river (lake) and canal, the aggregate precipitation, mean temperature, total wind movement and prevailing direction of wind.

Month Ending.	CHEMICAL DETERMINATIONS.			MEAN LEVELS OF WATER IN				Difference	Rainfall	Temperature..	WIND MOVEMENT.	
	Free Ammonia.	Album'd Ammon.	Oxygen Used.	Lake.		Canal.					Miles	Prevailing direction ..
	In 1,000,000 parts.			Ft.	In.	Ft.	In.	In.	In.	°F		
1885.												
September 26..........	.0105	.085	0.88	10	1	10	6	5	2.95	63.2	4499	sw.
October 31..........	.0042	.078	0.75	9	11	11	9	22	3.89	52.7	6661	n.
November 28..........	.0047	.074	2.22	9	7	10	1	6	2.33	45.5	5942	nw.
December 26..........	.0047	.088	2.18	9	1	11	7	30	2.94	29.6	6051	sw.
1886.												
January 30..........	.0127	.090	1.37	9	6	12	4	34	3.82	24.2	8207	nw.
February 27..........	.0175	.079	1.61	9	7	11	4	21	1.31	27.4	6770	sw.
March 27..........	.0047	.073	1.16	9	9	11	8	23	.95	35.0	6204	nw.
April 24..........	.0037	.079	1.46	9	11	10	7	8	1.46	46.5	5817	sw.
May 29..........	.0012	.079	1.67	10	4	11	11	19	1.66	56.1	6782	sw.
June 26..........	.0005	.068	1.16	10	4	11	8	16	.94	65.0	4542	ne.
July 31..........	.0023	.067	1.34	10	3	11	8	17	1.53	70.7	6194	ne.
August 27..........	.0018	.068	1.02	10	....	11	8	20	2.28	73.0	4925	ne.

The extraordinary character of the rainfall phenomena during the period of observation—a semi-tropical precipitation in the fall of 1885, and an unparalleled drouth during the spring and summer of 1886—has led to the compilation of the following table of the rainfall at Chicago, by months, since 1871, the total yearly rainfall and the monthly means for the past fifteen years. It will be seen that the yearly amount of rainfall has increased by 25 per cent. comparing the average of the first five years, 1871–75, with the average of the last five years, 1881–85.

Months.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.
January	4.13	.68	2.56	3.47	.95	3.22	1.91	1.31	.54	3.53	.87	1.55	1.74	1.39	3.18
February.........	1.35	.84	.47	1.51	1.99	3.90	.06	2.12	1.47	2.91	5.98	2.24	4.74	3.27	2.01
March	2.76	3.79	.89	2.15	1.43	4.04	5.37	4.39	2.37	2.23	2.99	3.43	.42	5.16	5.57
April	3.70	3.03	6.22	2.67	2.32	2.07	2.42	5.57	1.93	5.20	1.84	1.72	3.72	3.05	4.00
May..............	3.90	3.24	7.20	2.08	3.64	1.85	1.81	5.22	3.89	4.97	1.75	5.52	7.32	1.53	3.17
June	5.56	3.45	1.44	3.25	5.17	5.96	6.04	3.02	3.18	3.50	5.93	5.71	5.61	2.11	5.20
July.............	2.52	3.09	4.04	.58	7.18	3.11	2.98	6.09	5.58	3.07	4.31	3.43	5.53	3.71	2.44
August	2.01	2.59	1.58	3.15	3.29	3.66	3.06	3.66	.45	4.47	.54	4.96	1.21	2.50	11.28
September	.74	6.43	3.53	3.76	4.39	3.74	2.02	1.99	1.18	2.25	4.34	.91	1.36	2.29	2.97
October..........	*	.65	2.43	2.55	4.36	1.20	6.51	5.17	2.72	3.09	6.89	3.40	9.36	3.59	3.87
November	3.62	1.06	1.61	2.83	.74	3.25	6.08	.83	4.93	.87	5.97	1.48	5.26	1.80	2.33
December........	3.44	.22	4.44	.68	2.63	.48	2.75	2.58	2.47	1.01	2.67	1.99	1.59	4.21	3.35
Totals	37.55	29.07	36.41	28.68	38.09	36.48	41.01	41.95	30.71	37.10	14.18	41.34	45.86	34.61	44.37
Av'ge for 5 years' periods:			23.96					37.45					42.07		

*Records for October, 1871, are missing on account of the great fire.

Compared with the mean rainfall of the corresponding months during the fifteen years—1871–1885—the following contrast is shown for the fourteen months ended September, 1886.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1885.....................	......	......	......	......	......	......	......	11.28	2.97	3.87	2.33	3.35
1886.....................	3.56	1.51	1.79	1.29	.99	.94	1.53	*3.38	6.93	......	......	......
Mean of fifteen years..	2.66	2.32	2.79	3.63	3.81	4.34	3.84	3.22	2.79	3.82	2.84	2.30

*Up to the 15th there was but .53 of an inch in August, 1886, and from February 1 up to this date, a total of only 8.58 inches, while the average amount for the same period during the previous 15 years was 22.34 inches.

SUBURBAN WATER SUPPLIES.

The following tables present the weekly chemical determinations of the water supply of Lake View and of Hyde Park from December 5, 1885, to April 10, 1886, inclusive, together with the mean lake level, total rainfall, mean temperature, total wind movement and prevailing direction of the wind for each week. The same data are also given for Evanston from December 26, 1885, to April 10, 1886. Observations were suspended at this latter date—sufficient determinations having been secured for the main point in view, the conditions affecting the purity of the water supply of Chicago.

LAKE VIEW.

Week ending.	CHEMICAL DETERMINATIONS.			Physical condition.	MEAN LAKE LEVEL.		Total rainfall	Temperature.	WIND MOVEMENT.	
	Free Amm.	Album. Amm.	Oxygen Used.		Ft.	In.	In.	° F.	Miles	Prevailing direction.
	In 1,000,000 parts.									
1885.										
Dec. 5	.0024	.080	1.60	Muddy	9	1	.07	36.5	1486	sw.
12	.0078	.144	*	“	9	1	2.08	20.2	1691	sw.
19	.0056	.110	*	“	8	10	.67	24.5	1371	sw.
26	.0056	.088	1.92	Very turbid	9	5	.12	37.6	1503	sw.
1886.										
Jan. 2	.0220	.110	2.80	Turbid	9	3	.41	40.3	1215	s.
9	.0092	.074	1.76	Very turbid	10	....	.98	25.4	1967	nw.
16	.0310	.088	1.44	“	9	5	.80	15.8	1967	w.
23	.0136	.076	1.28	Sed. 40. 6 pr 1,000,000	9	4	1.18	13.5	1553	sw.
30	.0270	.084	1.44	Steadily improving	9	4	.45	26.0	1505	nw.
Feb. 6	.0032	.078	1.68	Turbid	9	4	.07	10.0	1526	sw.
13	.0480	.088	1.92	“	9	9	.61	42.4	1404	se.
20	.0500	.082	2.24	Yellow	9	8	.21	27.5	1849	sw.
27	.0180	.074	1.76	Turbid	9	6	.42	29.6	1991	s.
March 6	.0070	.078	1.60	Turbid	9	7	.01	26.8	1427	nw.
13	.0050	.082	88	Nearly clear	9	5	.31	30.7	1596	sw.
20	.0050	.080	1.08	“	9	9	.46	43.7	1373	n.
27	.0040	.070	1.68	Very turbid	10	2	.17	38.8	1808	nw.
April 3	.0040	.110	4.00	Muddy	9	11	.89	33.3	1778	sw.
10	.0020	.078	1.52	Turbid	9	10	.00	40.4	1600	nw.
Mean	.0142	.088	1.60							

* Water too dirty to make test.

HYDE PARK.

Week ending.	CHEMICAL DETERMINATIONS.			Physical condition.	MEAN LAKE LEVEL.		Total rainfall	Temperature.	WIND MOVEMENT.	
	Free Amm.	Album. Amm.	Oxygen Used.		Ft.	In.	In.	° F.	Miles	Prevailing direction.
	In 1,000,000 parts.									
1885.										
Dec. 5	.0020	.080	1.44	Slightly turbid	9	1	.07	36.5	1486	sw.
12	.0056	.090	2.56	Very turbid	9	1	2.08	20.2	1691	sw.
19	.0040	.090	1.84	“	8	10	.67	24.5	1371	sw.
26	.0084	.090	1.60	Turbid	9	5	.12	37.6	1503	sw.
1886.										
Jan. 2	.0150	.080	1.44	Turbid	9	3	.41	40.3	1215	s.
9	.0500	.078	2.08	Very turbid.	10	..	.98	25.4	1967	nw.
16	.0080	.076	1.68	Slightly turbid	9	5	.80	15.8	1967	w.
23	.0230	.078	1.44	“	9	4	1.18	13.5	1553	sw.
30	.0186	.086	1.40	Steadily improving	9	4	.45	26.0	1505	nw.
Feb. 6	.0094	.088	1.60	Turbid	9	4	.07	10.0	1526	sw.
13	.0088	.084	1.52	Clear	9	9	.61	42.4	1404	se.
20	.0212	.078	1.76	Slightly turbid	9	8	.21	27.5	1849	sw.
27	.0520	.084	1.68	“	9	6	.42	29.6	1991	s.
March 6	.0300	.086	1.76	Nearly clear	9	7	.01	26,8	1427	nw.
13	.0070	.088	1.04	“	9	5	.31	30.7	1596	sw.
20	.0030	.090	1.44	“	9	9	.46	43.7	1373	n.
27	.0070	.084	1.84	Slightly turbid	10	2	.17	38.8	1808	nw.
April 3	.0020	.088	1.04	Slightly turbid	9	11	.89	33.3	1778	sw.
10	.0020	.082	2.40	Turbid	9	10	.00	40.4	1600	nw.
Mean	.0145	.084	1.66							

EVANSTON.

Week ending.		CHEMICAL DETERMINATIONS.			PHYSICAL CONDITION.	MEAN LAKE LEVEL.		Total rainfall	Temperature.	WIND MOVEMENT.	
		Free Amm.	Album. Amm.	Oxygen used.						Miles	Prevailing direction..
		In 1,000,000 parts.				Ft.	In	In.	° F.		
1885.											
Dec.	26	.0054	.076	.96	Turbid......................	9	5	.12	37.6	1503	sw.
1886.											
Jan.	2	.112	.102	2.64	Turbid......................	9	3	.41	40.3	1215	s.
	9	.017	.100	3.28	"	10	0	.98	25.4	1967	nw.
	16	.0320	.104	*	Very turbid.................	9	5	.80	15.8	1967	w.
	23	.0106	.084	1.36	Slightly turbid.............	9	4	1.18	13.5	1553	sw.
	30	.0084	.088	1.12	Steadily improving.........	9	4	.45	26.0	1505	nw.
Feb.	6	.0078	.096	1.12	Slightly turbid.............	9	4	.07	10.0	1526	sw.
	13	.0064	.076	1.04	Clear	9	9	.61	42.4	1404	se.
	20	.0090	.076	2.16	Turbid......................	9	8	.21	27.5	1849	sw.
	27	.0150	.080	1.52	Slightly turbid.............	9	6	.42	29.6	1991	s.
March	6	.0072	.074	.80	Clear	9	7	.01	26.8	1427	nw.
	13	.0050	.076	.96	Nearly clear................	9	5	.31	30.7	1596	sw.
	20	.0020	.076	1.04	"	9	9	.46	43.7	1373	n.
	27	.0030	.078	1.44	Slightly turbid.............	10	2	.17	38.8	1808	nw.
April	3	.0030	.080	1.60	Turbid......................	9	11	.89	33.3	1778	sw.
	10	.0040	.080	2.56	"	9	10	.00	40.4	1600	nw.
Mean.......		.0154	.084	1.47							

* Water too dirty to make test.

It should be noted that a considerable share of the turbidity above reported is due to the fact that the intake of the water supply for these towns is, in every case, much nearer the shore than the Chicago inlet. Windy and stormy weather consequently produces greater effects, by stirring up the shore deposits, not only of organic matter, but of sand and clay.

SEWAGE DISPOSAL OF CHICAGO.

Advantage was taken of the remarkably dry season to determine the rate of purification of the water in the Illinois and Michigan canal and in the Illinois river during June, July and August. As shown by the preceding table, the rainfall was so light up to the middle of August that the contents of the canal from Bridgeport to Joliet, where it unites with the Des Plaines, were practically unaffected by dilution. The conditions were as favorable as though the experiment was conducted in a laboratory. Whatever purification occurred between the points mentioned was due to sedimentation and oxidation, and mainly to the latter, since the passage of boats would interfere with the former.

During a tour of inspection accompanying the Governor, on May 30 and June 1, the attention of the Secretary was attracted by these conditions, and preparations were at once begun for taking advantage of the opportunity presented. Some delay occurred in securing collections of the water at points below Joliet, and it was not until June 26 that the first samples were collected, and then only from Bridgeport, Lockport, Joliet, Ottawa and Peoria.

The following table shows the results of the chemical examinations of the river water at Bridgeport, canal water at Lockport, of the canal and Des Plaines river water at Joliet, and of the Illinois river water at Ottawa and Peoria.

PLACE.	Date, 1886.	Free ammonia.	Alb'd ammonia.	Oxygen used.	Physical Condition of Water.
		In 1,000,000 parts.			
Chicago	June 26	.002	.066	1.20	Clear
Bridgeport	"	2.6	.64	12.0	Dark color; very bad odor
Lockport	"	2.8	.56	11.36	" " "
Joliet	"	1.7	.46	7.36	" " "
Ottawa	"	.50	.23	7.05	Slight discoloration
Peoria	"	.036	.15	5.04	Slight color
Chicago	July 3	.000	.066	1.44	Clear
Bridgeport	"	2.7	.52	6.80	Nearly clear, odor bad
Lockport	"	2.4	.42	7.2	Bad color and odor
Joliet	"	1.8	.46	9.76	" "
Ottawa	"	.104	.21	5.76	Some discoloration
Peoria	"				No water received
Chicago	July 10	.002	.072	1.12	Slightly turbid, .21 of an inch of rain during week
Bridgeport	"	4.2	.62	16.8	Very dirty
Lockport	"				No water received
Joliet	"	2.4	.56	9.20	Bad color and odor
Ottawa	"	.22	.164	4.96	Some discoloration
Peoria	" 8	.084	.15	5.04	Slight color
Chicago	July 17	.0030	.060	1.44	Slightly turbid; rain on 13th
Bridgeport	"	25.00	1.50	22.4	Black and filthy
Lockport	"	10.20	.72	12.8	Bad color and odor
Joliet	"	13.00	.44	14.5	" "
Ottawa	"	.56	.252	6.54	Some discoloration
Peoria	"				No water received
Chicago	July 24	.0050	.072	1.28	Slightly turbid
Bridgeport	"	5.50	.372	12.6	Bad color and odor
Lockport	"	9.20	.470	14.8	" "
Joliet	"				No water received
Ottawa	"				" "
Peoria	"				" "
Chicago	July 31	.0036	.068	1.44	Clear
Bridgeport	"	23.00	1.76	23.2	Very filthy; terrible stench
Lockport	"	11.00	.72	10.7	Dirty color; very bad odor
Joliet	"	9.20	.44	5.68	Dark " " "
Ottawa	"	.49	.25	6.00	Nearly clear
Peoria	"	.0048	.196	4.64	Slight color
Chicago	Aug. 7	.0034	.066	1.52	Nearly clear; .15 of an inch of rain during week
Bridgeport	"	26.00	1.50	16.8	Clearer than usual; stench bad
Lockport	"	12.00	.48	9.6	Less color; odor bad
Joliet	"	7.50	.42	5.84	Less color; some odor
Ottawa	"	.52	.32	6.40	Nearly clear
Peoria	"	.0072	.21	6.80	Some color; slight odor
Chicago	Aug. 14	.0020	.064	.72	Nearly clear; .38 of an inch of rain during week
Bridgeport	" 13	29.00	1.64	32.00	Black and filthy
Lockport	"	15.20	.88	9.76	Dark; bad odor
Joliet	"	9.8	.46	5.76	Color and odorless
Ottawa	" 14	.30	.144	4.80	Clear; no odor
Peoria	" 13	.042	.19	4.72	" "

Table of Chemical Examinations—Continued.

Place.	Date, 1886.	Free ammonia.	Alb'd ammonia.	Oxygen used.	Physical condition of water
		In 1,000,000 parts.			
Chicago	Aug. 21	.0020	.070	.88	Clear: 1.07 inches of rain during week.
Bridgeport	"	27.20	1.50	28.0	Very filthy
Lockport	"	15.00	.84	10.80	Much dirty sediment
Joliet	"	9.00	.112	5.20	Color and odor improving
Ottawa	"	....	....	....	No water received.
Peoria	"	.066	.212	4.88	Clear
Chicago	Aug. 28	.0000	.074	.96	Clear; .68 of an inch of rain during week.
Bridgeport	"	29.2	1.90	35.2	Very filthy
Lockport	"	13.00	88	12.4	Turbid but light; odor bad
Joliet	"	8.00	.32	6.80	Color and odor improving
Ottawa	"	.36	.33	3.12	Some color; floating vegetable matter
Peoria	"	.009	.206	2.80	Slightly colored; no odor.
Lockport	Sept. 4	11.50	.72	13.6	Dark color: very bad odor
Ottawa	"	3.20	.38	10.8	Floating vegetable matter; free ammonia unusually high for locality
Averages.					
Chicago	....	.00230	.0678	1.200	Ten analyses
Bridgeport	....	17.44	1.1952	20.58	" "
Lockport	....	10.23	.669	11.302	" "
Joliet	....	6.933	.408	7.788	Nine "
Ottawa	....	.38175	.2375	5.575	Eight "
Peoria	....	.03557	.1877	4.8457	Seven "

Some of the variations in the determinations above shown are due to the fact that with a high lake level the sewage outflow from the slips and docks and from the south fork of the south branch is dammed up, and a stream of water, comparatively pure, flows from the lake through the river to the pumps. As the lake falls this outflow pours into the river, and, finding its way to the pumps, increases the pollution of the contents of the canal.

Want of regularity in forwarding the specimens prevents the utilization of all these data, but the following table gives the averages of the different analyses of samples collected at each place on the same day:

Places.	Free Ammonia.	Alb'md Ammonia.	Oxygen used.
	In 1,000,000 parts.		
Bridgeport	26.563	1.633	26.20
Lockport, 29 miles below	12.733	.753	11.01
Joliet, 33 " "	9.426	.432	7.34
Ottawa, 81 " "	.413	.243	5.30
Peoria, 159 " "	.027	.194	4.81

The respective percentages of loss shown in the following may be taken as the measure of the rate of oxidation in the canal during the summer months, unaided by dilution:

PLACES.	Free Ammonia.	Per cent of loss.	Alb'md Ammonia.	Per cent of loss.	Oxygen used.	Per cent of loss.
	In 1,000,000 parts.					
Bridgeport	26.563	....	1.633	....	26.20	....
Lockport	12.773	52.1	.753	53.9	11.01	58.0
Joliet	9.416	26.1	.432	42.7	7.34	33.4
Total per cent of loss bet. Bridgeport and Joliet	64.6		70.36		72.0	

The different ratios of loss of free ammonia and albuminoid ammonia are accounted for by the partial conversion of the latter into the former. The measure of the purification is indicated by the means of these losses—that is, about 70 per cent. in 33 miles. In other words, over one-half of the sewage pollution disappears before reaching Lockport, 29 miles below Bridgeport, and nearly one-third of the remainder is lost in the next four miles, the increased rate of purification in this distance being due to the mechanical agitation of the water by falls, wheels, lockage, etc., and the greater extent of surface exposed to aeration by the union of the canal and the Des Plaines river.

During the period of 42 days covered by the examinations of which these are the means, there were only 3.04 inches of rain, while the average amount for the corresponding period during the preceding 15 years is 5.14 inches, and during the corresponding weeks in 1885 there were 13.5 inches, or more than four times as much. From February 1 to August 15 it was so dry that the light rains during the six weeks under consideration were quickly absorbed by the earth or evaporated before reaching the streams. As before remarked, there was no dilution of the contents of the canal between Bridgeport and Joliet, 33 miles—and the loss of sewage pollution must be attributed to oxidation.

If the same average rate per mile obtained after leaving Joliet, the pollution of the canal by the sewage of Chicago should disappear within the next 10 or 12 miles, or at about Channahon. An examination made by the Secretary on June 1, corroborates this estimate. There was no evidence of sewage pollution, discernible by the senses, in the canal below the Kankakee feeder, which is three miles below Channahon and 48 miles from Bridgeport. The purification of the Des Plaines is even more rapid than this, owing to its shallow, wider and more broken flow insuring more perfect aeration.

It is stated that an average of about 45,000 cubic feet per minute was being pumped from the river into the canal during this period. Whatever the quantity it is obvious that if the volume of dilution had been increased by 20 per cent. the contents of the canal would have been entirely inoffensive to the senses on reaching Joliet—not alone through the increased quantity of oxygen this additional 20 per cent. of water would contain, but also because of the improved condition of the river and its branches which would result from the continuous removal of the sewage and foul waste.

A comparison of the analyses of the waters collected at Ottawa and Peoria will show that causes entirely apart from Chicago sewage pollution affect the chemical determinations. The better character of the Peoria water, as compared with that at Ottawa, is to be attributed to the pumping at the water-works—the Peoria specimens being drawn from city hydrants while those at Ottawa were taken from the river. . The large amounts of organic matter shown by the analyses are mainly of vegetable origin, due to the sluggish flow through a rich, alluvial region, and increased by the unusually low stage of water in the Illinois and its tributaries during the period of observation. The chemical determinations and the characterizations of physical signs—odor, color, etc—are, therefore, not to be compared with similar determinations and characterizations of the lake water. It is entirely safe to say that there was no Chicago sewage pollution of the Illinois river water at these points, and similar examinations made during the freshet period in February and March, 1886, showed no trace of Chicago sewage.

CONCLUSIONS.

In the report of the Secretary on this subject, made in 1879 and published in the Second Annual Report of the BOARD, occurs this passage:

"After a careful investigation I am satisfied that with 50,000 cubic feet of water passing into the head of the canal per minute, the (Chicago) main river and south branch will be purified; no nuisance will result from sewage at Joliet and below, and the potability of the water in the Illinois river at Peoria will not be in the least affected from that source. An increase of water to 60,000 cubic feet per minute would, in my opinion, take in addition the sewage of the north branch after it has once been cleaned out, and would diminish the nuisance in the south fork of the south branch at least three-fourths."

Every development since that time has corroborated the conclusions then arrived at, and the practical experience of the past twelve months amounts to a demonstration. At the date when the estimate of the number of cubic feet per minute necessary to secure the above results was made, the population of the city was less than 500,000, of which number fully 20 per cent., or say 100,000, furnished no share of the sewage pollution of the river, either for want of sewer connections, or because their sewage was discharged directly into the lake. So that the figures 50,000 and 60,000 cubic feet per minute represent a minimum of 12,250 and a maximum of 15,000 cubic feet of water per minute to be removed from the south branch of the Chicago river into the canal for every 100,000 inhabitants, whose household and manufacturing wastes are discharged into the river and its branches.

In summer, when oxidation proceeds most rapidly owing to favorable conditions of light, heat and motion—the minimum quantity would have sufficed; but in winter, when oxidation is retarded by ice formation, shutting out light and air, by low temperature and impeded motion, it is probable that the maximum dilution would be necessary. Since the time when this estimate was made there has been a decrease of the wastes from certain industries, notably from the slaughter and packing houses. This diminution is likely to continue as these wastes are more fully utilized,* so that it is probably safe to assume that the maximum concentration of the sewage effluent of the Chicago river has been reached, and that in the future a lesser, rather than a greater, percentage of dilution will suffice than the above figures would require.

Stated in its simplest form the problem of preserving the water supply of Chicago and its suburbs from pollution and the inoffensive disposal of their sewage and wastes of all kinds, requires that such sewage and wastes be diverted from the lake into the river and its branches; and that there be continuously pumped from the river into the canal, or other waterway, an average of 14,000 cubic feet per minute for every 100,000 inhabitants. The diversion of sewage and wastes into the river will preserve the purity of the lake water, even when taken at the present distance from the shore. The continuous pumping of an average of 14,000 cubic feet per minute for every 100,000 inhabitants will effect a prompt removal of sewage from the river and its branches so largely diluted that—with the accelerated rate of oxidation caused by the mechanical agitation—it will be rapidly rendered inoffensive in the canal and will, under no circumstances, affect the potability of the Illinois river water. If the removal from the south branch be effected by gravity, a larger volume must be provided.

These are the two conditions of the solution of the problem. All else is a matter of engineering detail, embracing the change of fall of sewers (whether within or beyond the present city limits of Chicago) now discharging into the lake, or their abandonment and the construction of new ones discharging into pump wells in low areas, the sewage to be thence pumped into the river; the exclusion or reduction of storm water and overflow in the river from the Des Plaines watershed and from the watershed of the north branch; the utilization of the canal or of the bed of the Des Plaines, or of both to an extent adequate to the removal of 14,000 cubic feet per minute for every 100,000 inhabitants, and other details.

---

*Processes, already nearing perfection, will soon utilize the "tank-water" from rendering establishments in the manufacture of soap, animal food and fertilizers, thus eliminating this source of pollution.

Some of these details have already received partial attention. The dam recommended to be restored in 1883 so as to exclude the ordinary flow of the Des Plaines, was completed in the fall of 1885, and has been recently repaired, so that at this date it suffices to exclude the Des Plaines at the present stage of that stream. Pumping works recommended in 1879 to be constructed, of 60,000 cubic feet capacity, have been completed, but must in a short time become inadequate, owing to the increase of population to be provided for. Although when first constructed, they were only capable of a maximum of 49,587 cubic feet per minute against a head of 8 feet as shown by the test of May, they have been recently remodeled and are now believed to be fully up to the contract capacity. They will not, however, even now more than suffice to remove the prescribed quantity, making liberal allowance for the present population in the area not connected with sewers and in that which is sewered into the lake; and they will be entirely inadequate when this sewage is diverted into the river, as it should be as speedily as practicable. As it is not deemed prudent to operate more than three-fourths of the plant at a time, it is not likely that the perfected pumps represent an actual effective capacity of more than 50,000 to 55,000 cubic feet.

Some years—probably five at the earliest—must elapse before any comprehensive plan, adequate to the final disposal of this question, can be carried out. Meanwhile, the canal offers a waterway which would suffice for nearly, if not quite, that period, if it were fully utilized by pumps of sufficient capacity.* Without regard to Asiatic cholera or other extraordinary menace to the public health, the present sanitary interests of Chicago and her suburbs and of the territory along the canal and Illinois river for nearly half the length of the State, demand the protection of the water supply of Lake Michigan; the continuous cleansing of the Chicago river and its branches; an inoffensive condition of the contents of the canal; and the preservation of the potability of the Illinois river water. The only feasible method of securing these ends, even temporarily and partially, is believed to be clearly indicated in the preceding pages, the data and facts in which merely elaborate and confirm the propositions formulated in the report already alluded to, made in 1879.

JOHN H. RAUCH, M. D.

SPRINGFIELD ILL, October 29, 1886.

ON motion of Dr. Clark the report was accepted and ordered to be printed.

After disposing of some routine business the BOARD at 12 M. adjourned.

---

*A survey made by the United States Government engineers in the fall of 1882, showed the canal between Bridgeport and Lockport to be a little over 60 feet wide at the surface, of somewhat irregular outline, and averaging about 390 square feet of sectional area. Utilized to its fullest capacity, the canal would probably carry about 70,000 cubic feet, and as this would give a stage of water of nearly 14 feet, or 7 feet 6 inches above datum, it would require that bridges crossing the canal at a less elevation than 20 feet above datum should be raised to that height in the clear, in order not to interfere with navigation.

SUPPLEMENTAL REPORT ON THE SEWAGE DISPOSAL OF CHICAGO.

EFFECT ON THE DES PLAINES AND ILLINOIS RIVERS OF POLLUTION FROM CHICAGO SEWAGE DURING THE MONTHS OF DECEMBER, 1886, AND JANUARY, 1887.

By John H. Rauch, M. D., Secretary Illinois State Board of Health.

The object of this investigation was to ascertain what effect low temperature and the freezing over of the Illinois and Michigan canal and the Des Plaines and Illinois rivers had upon their pollution by Chicago sewage. During the period under observation the canal was frozen over fifty-six days and the rivers about fifty days.

Soon after the canal was frozen over there was an increase of the pollution at Joliet compared with the observations made last summer, and on the 9th of December it was observed at Ottawa where none was found when the examinations were made in June, July and August. The pollution continued to increase until the maximum was reached on the 27th of December at Joliet, and about January 4 at Ottawa. This increase, however, was not alone owing to the ice and low temperature, but to the fact that an accident occurred at the pumping-works at Bridgeport, while they were being tested before acceptance from the contractors by the city, so that practically, no water was pumped from December 7 to 27 inclusive as shown by an examination of the following table, giving the difference in depth in the canal and the Chicago river.

During this period, when the canal was not frozen over, only about 17,000 cubic feet of water per minute passed through by gravity, and when frozen over only about 15,000 cubic feet.

On the afternoon of December 27, the pumps were set in motion, and until the end of January about 50,000 cubic feet per minute were pumped from the south branch of the Chicago river into the canal. There was a marked decrease of organic matter in the water at Joliet on January 1. This decrease continued until the end of the month, when the quantity of organic matter was less than at any time for the seven months previous. From January 4 to the end of the month there was also a marked decrease of organic matter at Ottawa.

At Peoria, a small amount of sewage was observed on January 8; this increased until the 22d, but entirely disappeared on the 29th.

It has been estimated that it takes water from Lake Michigan to reach Peoria—when at a low stage—about twenty-five days. With the ice covering during the period under investigation the pollution by Chicago sewage was not manifest at Peoria until about thirty days after the pumping ceased early in December. This was no doubt partially owing to the fact that during December only 1.76 inches of rain fell, and of this .90 of an inch was snow, practically having no effect in increasing the quantity of water in the Des Plaines and the Illinois rivers, The pollution disappeared from Peoria in about twenty-one days from the time it was first noticed. This latter effect was no doubt largely owing to the result of the increased velocity caused by the pumping of 50,000 cubic feet of water per minute from the 27th of December to the last of January. This is probably the first time since the construction of the pumping-works that Chicago sewage reached Peoria. On January 22, 1.37 inches of rain fell, and this, in addition to the melting snow, caused freshets in some of the tributaries of the Des Plaines and Illinois rivers and no doubt affected the chemical determination of the samples of water collected at Joliet, Ottawa and Peoria on that day.

PLACE.	EFFECT BRIDGEPORT PUMPS.							MET'L CONDITIONS.		CHEMICAL DETERMINATIONS.			PHYSICAL CONDITION OF WATER.
	Date..........	Av. level of water in canal lock..		Av. level of water in Chicago river......		Difference.		Mean temperature........	Rainfall—inches.	Free Ammonia in 1,000,000 parts..	Alb. Ammonia in 1,000,000 parts..	Oxygen used by 1,000,000 parts..	
		Ft.	In.	Ft.	In.	Ft.	In.						
	1886.												
	Dec. 1	11	10	9	1	2	9	14.1	.—*				
	2	11	11	8	11	3	0	8.3	0				
	3	11	11	8	11	3	0	13.3	0				
	4	12	0	8	11	3	1	22.0	.07*				
	5	11	11	9	9	2	2	22.4	.—*				
Chicago....	6	12	0	8	11	3	1	29.9	0	3.70	.56	17.6	Nearly clear, bad odor.........
Joliet......	7	9	6	8	10	0	8	32.7	0	11.00	.60	16.8	" " " " ....
	8	9	0	9	0	0	0	35.9	0				
Ottawa.....	9	9	4	9	4	0	0	42.0	.—	1.52	.54	10.4	Clear, very little odor.........
	10	9	5	9	5	0	0	44.2	.—				
	11	8	10	8	10	0	0	51.2	.—*				
	12	9	0	9	0	0	0	48.0	.33*				
Joliet......	13	9	0	9	0	0	0	34.8	.19*	13.00	1.80	19.2	Nearly clear, odor marked.....
Ottawa.....	13									5.74	2.60	15.2	" " some odor.......
	14	9	4	9	4	0	0	30.8	.18*				
	15	9	6	9	6	0	0	11.6	.—*				
	16	9	3	9	2	0	1	12.1	0				
	17	9	0	9	0	0	0	29.4	.14*				
Bridgeport.	18	8	10	8	10	0	0	28.1	.02*	17.60	4.80	28.8	Nearly clear, very bad odor...
	19	8	10	8	10	0	0	17.8	.02				
Joliet......	20	8	9	8	2	0	7	24.8	0	13.20	3.30	21.6	Nearly clear, some odor......
	21	10	2	8	6	1	8	27.3	.29				
Ottawa.....	22	8	8	8	8	0	0	25.9	0	6.80	1.20	11.2	Nearly clear, slight odor......
	23	8	10	8	10	0	0	30.2	0				
	24	9	10	9	0	0	0	25.4	.—				
	25	8	10	8	10	0	0	26.6	.17				
	26	9	0	9	0	0	0	17.9	.09*				

PLACE.	EFFECT BRIDGEPORT PUMPS.							MET'L CONDITIONS.		CHEMICAL DETERMINATIONS.			PHYSICAL CONDITION OF WATER.
	Date........	Av. level of water in canal lock..		Av. level of water in Chicago river.....		Difference.		Mean temperature.........	Rainfall—Inches.	Free Ammonia in 1,000,000 parts..	Alb. Ammonia in 1,000,000 parts..	Oxygen used by 1,000,000 parts...	
		Ft.	In.	Ft.	In.	Ft.	In.						
Joliet......	27	9	0	8	8	0	4	-2.7	—	18.40	4.90	24.8	Clear, bad odor...............
Ottawa.....	28	11	9	8	6	3	3	8.7	0	.96	2.92	60.0	Much floating matter, peculiar yellow color, very unusual odor..........
	29	12	3	9	0	3	3	17.5	.05*				
	30	12	3	9	0	3	3	22.7	0				
	31	12	4	9	2	3	2	22.4	.23*				
	1887.												
Joliet......	Jan. 1	12	8	9	7	3	1	1.6	0	11.60	3.72	19.6	Clear, bad odor................
	2	12	8	9	10	2	10	-4.8	0				
Lockport ..	3	12	6	8	8	3	10	-2.5	0	9.20	3.90	21.6	Clear, very bad odor..........
Ottawa.....	4	12	4	8	4	4	0	18.1	.12	8.20	2.70	10.8	" little odor..............
	5	12	4	8	10	3	6	5.2	.—				
	6	12	4	8	11	3	5	-0.5	.03				
	7	12	4	9	1	3	3	2.4	.—				
Joliet......	8	12	7	9	0	3	7	12.6	.04	8.40	4.20	18.4	Clear, very little odor.........
Ottawa.....	8									2.20	2.80	44.0	Turbid, peculiar odor not natural ....
	9	12	6	8	10	3	8	11.7	.13				
	10	12	8	8	8	4	0	-5.9	0				
	11	12	5	7	11	4	6	16.7	0				
	12	12	6	8	6	4	0	26.5	0				
	13	12	6	8	6	4	0	30.8	.20				
	14	12	8	8	8	4	0	25.0	.47				
Joliet......	15	12	8	8	10	3	10	18.1	.01	5.40	3.00	10.0	Clear, but dark color, odor....
Peoria	15									1.26	.25	4 4	Clear, slight color and odor..
	16	12	8	9	2	3	6	26.9	.01				
	17	12	10	8	8	4	2	7.3	.—				
Bridgeport.	18	12	10	9	2	3	8	-4.3	0	6.60	3.50	16.0	Clear, not much odor.........
	19	12	4	8	9	3	7	27.1	0				
	20	12	4	8	4	4	0	32.2	0				
	21	12	6	8	8	3	10	27.5	0				
Joliet......	22	12	6	8	11	3	7	43.0	1.39	3.24	1.76	14.4	Turbid, slight odor, floating matter.
Ottawa.....	22									2.60	.30	6.8	Clear, very little odor.........
Peoria	22									3.60	.68	7.36	Clear, odor noticeable.......
	23	13	4	9	5	3	11	29.2	.26				
Chicago....	24	13	4	8	11	4	5	31.3	.—	.042	.080	1.76	Slightly turbid...............
	25	13	0	9	4	3	8	30.4	.04				
	26	12	6	8	0	4	6	18.5	.03				
	27	12	0	8	2	3	10	—	0				
	28	12	0	8	4	3	8	36.3	.—				
Bridgeport.	29	11	10	8	10	3	0	36.3	0	5.90	3.80	22.4	Turbid, odor marked..........
Joliet......	29									3.20	1.54	10.0	" " slight...........
Peoria......	29									.52	.36	7.6	" no odor, in appearance much the same.....
	30	11	10	8	10	3	0	2.2	.01				
	31	12	8	9	2	3	6	8.4	.40				

*Melted snow. .—Inappreciable.

In some respects the investigation is not so complete as desired, owing to the difficulty in collecting the samples of water, and also to the fact that several of them were frozen in transit. The water collected at Joliet was all obtained under the same conditions, and with regularity. An examination of the following table, showing the chemical determinations, will explain the foregoing:

TABLE SHOWING EFFECT OF POLLUTION AT JOLIET.

1886.	Effect of Bridgeport Pumps.						Meteorological Conditions		Chemical Determinations.			Physical Condition of Water.
	Av. level water canal lock......		Av. level of water in Chicago river......		Difference.		Mean temperature	Rainfall—Inches.	Free Ammonia in 1,000,000 parts.	Alb. Ammonia in 1,000,000 parts.	Oxygen used in 1,000,000 parts.	
	Ft.	In.	Ft.	In.	Ft.	In.						
Dec. 7	9	6	8	10	....	8	32.7	......	11.00	.60	16.8	Nearly clear, bad odor..........
13	9	0	9	0	....	....	34.8	*19	13.00	1.80	19.2	" " " ....
20	8	9	8	2	....	7	24.8	......	13.20	3.30	21.6	" " some " ....
27	9	0	8	8	....	4	—2.7	.—	18.40	4.90	24.8	Clear, bad odor.................
1887.												
Jan. 1	12	8	9	7	3	1	1.6	......	11.60	3.72	19.6	Clear, bad odor.................
8	12	7	9	0	3	7	12.6	.04	8.40	4.20	18.4	" very little odor ....
15	12	8	8	10	3	10	18.1	.01	5.40	3.00	10.0	" dark color, some odor.....
22	12	6	8	11	3	7	43.0	1.39	3.24	1.76	14.4	Turbid, floating matter, slight odor. ....
29	11	10	8	10	3	0	36 3	......	3.20	1.54	10.0	Turbid, slight odor..............

*Melted snow.

.—Inappreciable.

The investigation has demonstrated that in winter the amount of sewage pollution is almost entirely dependent upon the amount of water that passes through the canal from the Chicago river; also, that not as much sewage goes into the canal when navigation is closed as when it is open, or, in other words, more of the sewage is deposited in the river in winter than in summer when the tugs and vessels stir it up.

SUMMARY OF OFFICE WORK AND MISCELLANEOUS.

The total correspondence of the Secretary's office for the year 1886 embraces 20,914 letters, etc., of which number 7,407 were received and 13,507 sent. That of the last quarter shows an aggregate larger than for any like period in the history of the BOARD, 9,348 communications being received and sent, 6,755 of this number being individual letters written to each physician and midwife in the State, concerning their professional and legal relations with the registration of births and deaths.

Of the publications of the BOARD there were distributed during the last quarter 2,057 copies of the Eighth Annual Report, sixty-four copies of the Seventh, and forty-five copies of the preceding annuals; 103 copies of the Official Register of Physicians; 300 copies of Report on Medical Education; 2,500 copies of the proceedings of the October meeting of the BOARD, and the usual number of other publications.

During the year there were distributed 4,373 copies of the annual reports—2,057 of the Eighth, 2,096 of the Seventh, and the remainder of the preceding volumes; 2,617 copies of the last Official Register and 1,213 copies of the Reports on Medical Education for 1885 and 1886; 10,220 Quarterly Reports; 5,325 Preventable Disease Circulars—700 Small-pox, 2,900 Diphtheria, 350 Typhoid fever, and 1,375 Scarlet-fever; 500 Vaccination Circulars and 10,000 Vaccination Certificates; 1,000 copies of Public Health Laws and Sanitary Memoranda; 2,000 blanks for vital statistics and accompanying circulars of instruction and blanks for the sanitary inspection of 300,000 houses and premises.

The Eighth Annual Report, a volume of 686 pages, including the Report on Medical Education, has been printed and completed, and is now being distributed. A special edition of the section in the appendix pertaining to Medical Education has been prepared and distributed.

Certificates and Licenses:

Applications for certificates authorizing the practice of medicine in the State to the number of 580 have been received during the year, 99 of these during the last quarter, and 437 original certificates and 6 duplicates have been issued. The diplomas of 10 colleges, presented by 23 graduates, have been required to be supplemented by examination on branches or subjects omitted by the schools. In addition to these, 42 applications were refused, owing to inability of the applicant to comply with the requirements of the Medical-Practice Act or the rules of the BOARD based thereon. Of the total 437 original certificates issued, 424 were to graduates of medical colleges, 6 were to practitioners of more than 19 years' practice in the State, and 6 were to candidates who passed an examination by the BOARD. One itinerant license for one month was issued.

To midwives, 86 certificates have been issued, 17 of them during the last quarter, 43 to graduates, 31 to successful candidates upon examination, and 12 upon years of practice in the State; 7 applications have been refused during the year mainly because of failure to pass the examination.

The Medical-Practice Act:

Fewer complaints have arisen under the enforcement of the provisions of the Medical-Practice Act than in any previous year. Only 147 such were received in the office of the BOARD during 1886, and the large majority of these were adjusted without formal action. In three cases the circumstances were sufficiently grave to leave the BOARD no alternative but the revocation of the certificate upon full proof of "unprofessional and dishonorable conduct." Frequent evidence is received of the good work of the Missouri State Board of Health in connection with the Medical-Practice Act of that State. That Board, although practically without means for the last two years, has been doing all it could to protect the people of the State from professional incompetence and humbuggery. The Board should be sustained, not alone by the reputable members of the profession, but by a liberal appropriation.

Vital Statistics:

The time and attention of the Secretary have been largely devoted during the year to the subject of the registration of births and deaths and the compilation of vital statistics. Every physician and midwife in the State has been personally addressed on this subject. A great many suggestions have been received, some of them useful and wise, but very many utterly impracticable. Probably 80 per cent. of the profession comply with the requirements of the law to a satisfactory extent, but it is apparent after ten years' experience that too much is exacted of the physician under the act as it now stands. With the proposed amendments this objection will be removed, and it may be confidently expected that within a few years the returns of births and deaths will be substantially accurate. This implies that the householder, parent, next of kin, etc., in cases where there is no professional attendant, be held to a strict accountability for the required return to the county clerk. In a few counties there is an indisposition to afford the county clerk the necessary facilities to enable him to discharge his duty fully under the law. This is a short-sighted policy, for these records of births and deaths are of direct importance to the counties themselves from every standpoint—social, sanitary and legal. The expense of one litigated case arising from defective records—and such cases are by no means rare and will increase in frequency with the lapse of years—would more than defray the cost of the necessary books and blanks and the hire of clerical service.

The Public Health:

Asiatic cholera continues its menace to the public health, both of Europe and America. Occasional cases are reported in Austria and Austria-Hungary, and one or two have occurred in the German Empire. A more direct threat to the United States, and especially to the Mississippi Valley, is in its ravages in the Argentine Republic of South America. Notwithstanding the energetic measures enforced by Chili, a recent telegram states that the disease has penetrated the cordon established along the Andes and has appeared on the Pacific slope. The Governor of Texas and the State Board of Health of Louisiana have instituted measures of precaution, the former having declared a rigid quarantine against vessels from all the cholera-infected ports of South America, and there is a general feeling of apprehension among the gulf and South Atlantic seaports. There can be no doubt that the danger to this country for the coming summer is greater than at any time since the first cases at Toulon in 1883. The preventive work which has been carried on since that time—and which, it is generally conceded, has had a markedly beneficial effect upon the general health of the country—is now more than ever important. There is danger that the immunity which has thus far obtained may lull communities and the public generally into a false sense of security, and lead to neglect of sanitary work or an abandonment of the systematic effort to secure the best condition of every locality.

As soon as the weather will permit at the close of winter this work should be vigorously resumed, and the highest attainable degree of cleanliness of dwellings and premises, outhouses and belongings of every description, of alleys, streets and public places, and of every public institution should be reached, and maintained. Experience has abundantly demonstrated that the ravages of a cholera epidemic are in direct proportion to the filth or cleanliness, the purity or impurity of the water supply, the purity or pollution of the soil, and the general wholesomeness of a given locality. The history of the present epidemic in Spain, France and Italy simply corroborates this experience. The main theory of cholera prevention is summed up in the aphorism upon the house-to-house inspection blanks of the BOARD, to-wit: Cleanliness is the best safeguard against Asiatic cholera.

Small-pox and Other Diseases:

Reports of small-pox have been received during the quarter from Shelbyville, and one case occurred in the jail at Springfield. There is reason to suspect that the cases in Shelbyville were varicella or chicken-pox, which disease is known to have existed at the same time in the practice of other physicians at that place. The precautions taken, the character of the disease in the outset being suspicious and not well defined, are to be commended. A supply of vaccine virus was furnished, and no other cases have been reported.

The case in the Springfield jail was that of a prisoner confined only a short time previously. He had been brought from East St. Louis, but inquiry at that place failed to reveal other cases, and the origin is still unknown. All unprotected inmates of the jail were at once vaccinated with virus furnished by the BOARD, concerning the results of which one of the attending physicians furnished the following report, which makes a very good showing for bovine virus:

"SPRINGFIELD, Ill., December 31, 1886.

"SIR:—The following report concerning the vaccinations made in the Sangamon County Jail is respectfully submitted: You furnished me twenty points of bovine virus, which I used on nineteen men. The greater number had been vaccinated in childhood or infancy, but the scars in all cases were very dim. Of the nineteen vaccinated, a typical result was obtained in fourteen cases; in one case the resulting cicatrix was perfect, but of small size; four failed to 'take;' of these four two had suffered from small-pox.

"This is the first time in my experience where bovine virus has been markedly successful.

Very respectfully,

J. H. UTLEY.

TO JOHN H. RAUCH, M. D. SECRETARY STATE BOARD OF HEALTH,
SPRINGFIELD, ILL."

Dr. Wilcox, who vaccinated some thirty-five of the inmates, corroborates the statement of Dr. Utley relative to the effectiveness of the bovine virus used. The prompt action of the local authorities no doubt prevented the spread of the disease in the jail.

Scarlet fever has been quite prevalent in some parts of the State, and still remains at the close of the quarter, although not as yet in epidemic form in any locality. In Englewood, Cook county, there were reported fifteen cases of scarlet fever, with ten deaths, and thirty-seven cases of diphtheria, with fifteen deaths, in a total population of 13,000, during the three months. In Renault, Monroe county, fifty cases of scarlet fever are reported, with four deaths; and in Pittsfield, Pike county, a number of cases, with two deaths.

The epidemic of diphtheria at Streator, La Salle county, has abated, but no returns of the total number of cases and deaths have been received as yet. A communication from the health officer states that the mortality from the disease formed fully 50 per cent. of the total death rate. A few cases have also been reported at Moweaqua, Shelby county, and in other portions of the State. In all these localities the preventable disease circulars of the BOARD have been furnished, and the rules and regulations applicable to the several diseases have been followed.

General Health of the State:

The general health of the State remains unusually good, so that more prominence is given to the relatively few outbreaks of the contagious diseases than there would be under ordinary circumstances. An exception to this general statement might be made in the case of typhoid fever, which has been quite prevalent in some localities under conditions which point to impure water supplies as the chief factor. The long continued dry weather had much to do with affecting the character of the water; in many instances the ordinary sources of supply gave out, and cisterns, wells, and springs ran dry, or were so much lowered that the usual degree of dilution of organic and other impurities did not obtain. The experience emphasizes the necessity of pushing the systematic investigation of the water supply of cities, towns, and villages already begun by the BOARD. This is one of the most important matters now demanding attention, and the need of a properly equipped laboratory for water and food analysis under the direction of the BOARD is obvious.

Water supplies and Analyses:

In this connection the following reports of Prof. J. H. Long concerning the water of the Illinois and Michigan canal and the Illinois river are submitted. These examinations are a continuation of the study of the rate of oxidation of Chicago sewage in the canal and river begun last summer. The conditions which prevailed during these recent examinations are very different from those of the earlier studies. The low temperature, ice formation, etc., reduce the rate of oxidation to the minimum, and the chemical determinations, although not yet sufficiently numerous for final conclusions, show a marked contrast to those given in the Secretary's report at the last meeting upon the Water Supply and Sewage Disposal of Chicago.

		Free ammonia, 1,000,000 parts.	Alb. ammonia. 1,000,000 parts.	Oxygen used, 1,000,000 parts.	
1886—					
Dec. 6	No mark...	3.70	.56	17.6	Water nearly clear, bad odor.
Dec. 7	Joliet......	11.00	.60	16.8	" " "
Dec. 9	Ottawa.....	1.52	.54	10.4	Clear, very little odor.
Dec. 13	Joliet......	13.00	1.80	19.2	Nearly clear, odor marked.
Dec. 13	No mark...	5.74	2.60	15.2	" some odor.
Dec. 18	Bridgeport.	17.6	4.80	28.8	" very bad odor.
Dec. 20	Joliet......	13.20	3.30	21.6	" some odor.
Dec. 22	Ottawa.....	6.80	1.20	11.2	" slight odor.

In the sample received December 6 you will observe that for the oxygen consumed and albuminoid ammonia the free ammonia appears small.

Yours very truly,

J. H. LONG.

		Free ammonia, 1,000,000 parts.	Alb. ammonia, 1,000,000 parts.	Oxygen used, 1,000,000 parts.	
1886—					
Dec. 27	Joliet......	18.40	4.90	24.8	Clear, with bad odor; much floating matter.
Dec. 28	Ottawa.....	.96	2.92	60.0	Yellow color; very miasmal odor.
1887—					
Jan. 1	Joliet......	11.60	3.72	19.6	Clear, with bad odor.
Jan. 3	Lockport ..	9.20	3.90	21.6	Clear, with very bad odor.
Jan. 4	Ottawa.....	8.20	2.70	10.8	Clear, little odor.

I think the figures begin to show some interesting points. It will be best, perhaps, to make a few more tests before drawing conclusions.

Yours respectfully,

J. H. LONG.

Prof. Long has also analyzed for the BOARD samples of water sent from Tower Hill, Shelby county, suspected to have been the cause of sickness and death in a family near that place. Prof. Long's report is herewith submitted:

Free ammonia per 1,000,000 parts	.034
Albuminoid ammonia per 1,000,000 parts	.092
Oxygen consumed per 1,000,000 parts	1.04

The water is very hard and without unpleasant taste. A slight sediment deposits on standing, which contains iron and organic matter. The tests show more albuminoid ammonia than desirable, but as the oxygen consumption is low I do not think we have sufficient grounds for condemning the water.

Yours very truly,

J. H. LONG.

Samples of water from Springfield have also been examined, with the following results:

Mark.	*Free amm. per 1,000,000 parts.*	*Alb. amm. per 1,000,000 parts.*	*Oxygen used per 1,000,000 parts.*
M. E. H.	.042	.038	.16 clear and hard
W. C., water con	.016	.024	1.44 clear and hard

Both waters contain small amounts of organic matter, but scarcely enough to point to dangerous contamination. M. E. H. shows only a slight test for chlorides. The second water contains more, but the organic matter is much less.

Yours respectfully,

J. H. LONG.

Water Supply and Sewage Disposal of Chicago:

Referring to the report of the Secretary on the Water Supply and Sewage Disposal of Chicago, the BOARD made a successful effort to secure a further appropriation from the city council of Chicago for the Drainage and Water Supply Commission in order to enable it to complete its work. This is already in an advanced state of forwardness, and a preliminary report is about to be published. But the original appropriation was largely expended, under instructions, in examining various suggested plans which, after thorough investigation, were found to be inadequate or enormously costly. The best, if not the only feasable plan—that so frequently recommended in the Secretary's reports to this BOARD during the last ten years—namely: Adequate dilution of the sewage by lake water so that it will be inoffensive to the senses in the canal and not injurious to the potability of the water of the Illinois river—remains to be fully elaborated on the basis of a population of 2,500,000 in the Cook county drainage district. This population will, it is computed, be reached within the next thirty years, and it would, obviously, be neither prudent from a sanitary standpoint nor economical on financial grounds to plan for less than this number. It is estimated that the necessary waterways to carry the sewage of such a population, properly diluted, to the Illinois river would involve an ultimate expenditure of from $10,000,000 to $12,000,000. In a work of such magnitude the outlay of a few thousand dollars in the necessary surveys and investigations may save many thousands. It was held to be the duty of the BOARD to urge this consideration upon the municipal authorities of Chicago.

Of more urgent practical importance is the necessity for an adequate provision for the operation of the full plant at the Bridgeport pumping station whenever the interests of the public health may require. During the last year the sewage dilution has been only from six and a half to seven volumes, while the Secretary's observation and study warrant the estimate that fourteen volumes of dilution is the minimum necessary for the sanitary requirements—which include a constant cleansing of the Chicago river and its branches, an inoffensive condition of the contents of the canal, and the preservation of the wholesomeness of the Illinois river. The pumps have been remodeled during the last year, and are now fully capable of securing this minimum dilution under ordinary circumstances. The appropriation for the maintenance of the plant and the maximum operation of the pumps whenever required should not be withheld.

FINANCIAL STATEMENT

OF THE

ILLINOIS STATE BOARD OF HEALTH,

FOR THE

FISCAL YEAR ENDED SEPTEMBER 30, 1886.

State Board of Health—Dr.

To State Treasurer:		
Balance of Regular Appropriations, October 1, 1885	$10,814 82	
Balance of Contingent Fund, available October 1, 1885	40,000 00	
Regular Appropriations, taking effect July 1, 1886	12,000 00	
		$62,814 82
To Treasurer of Board:		
Balance on hand October 1, 1885	$321 37	
Office Receipts for the year ended September 30, 1886	771 00	
		$1,092 37
		$63,907 19

State Board of Health—Cr.

By payment on all accounts as per itemized statement	$12,834 68	
By unexpended balance of Regular Appropriations, October 1, 1886	10,235 04	
By unexpended Contingent Fund, October 1, 1886	40,000 00	
By unexpended balance in hands of Treasurer of Board, October 1, 1886	837 47	
		$63,907 19

ITEMIZED STATEMENT OF EXPENDITURES

OF THE

ILLINOIS STATE BOARD OF HEALTH,

FOR THE

FISCAL YEAR ENDED SEPTEMBER 30, 1886.

Salary of Secretary	$3,000 00	
Clerical services	6,277 50	
Expenses of Board and Secretary attending meetings and making sanitary investigations	1,059 60	
Stationery, Printing and Binding	703 69	
Legal services and expenses incident to suits in connection with Medical-Practice Act	582 95	
Expressage	377 70	
Postage	319 00	
Medical and sanitary journals, books and newspapers	234 09	
Telegrams	115 00	
Janitor	96 00	
Telephone, rent and moving same	49 00	
Laundry (office towels)	12 00	
Sundries	8 15	
		$12,834 68
Total from Regular Appropriations	$12,579 78	
Total from Office Receipts	254 90	
		$12,834 68

REPORT OF THE TREASURER

OF THE

ILLINOIS STATE BOARD OF HEALTH,

FISCAL YEAR ENDED SEPTEMBER 30, 1886.

To the President and Members of the Illinois State Board of Health:

GENTLEMEN—Your Treasurer begs leave to present the following report of the receipts and disbursements of his office for the period commencing with the date of his last Annual Report, October 1, 1885, and ending September 30, 1886:

General Account—Dr.

Balance to credit of General Account, September 30, 1885		$321 37
Received of Dr. John H. Rauch Secretary:		
Office Receipts for October, 1885	$45 00	
“ “ November, 1885	50 00	
“ “ December, 1885	24 00	
“ “ January, 1886	35 00	
“ “ February, 1886	35 00	
“ “ March, 1886	176 00	
“ “ April, 1886	128 00	
“ “ May, 1886	92 00	
“ “ June, 1886	63 00	
“ “ July, 1886	43 00	
“ “ August, 1886	35 00	
“ “ September, 1886	45 00	
		771 00
Total accountability		$1,092 37

General Account—Cr.

Accounts paid by order of the Board for indebtedness accrued during the quarters preceding the respective meetings:

January, 1886, *Meeting*—for quarter ending December 31, 1885—		
Expenses incident to suits in connection with Medical-Practice Act	$65 50	
		$65 50
April, 1886, *Meeting*—for quarter ended March 31, 1886—		
R. E. Starkweather, clerical service	$16 00	
R. McWilliams, legal services	25 00	
Expenses incident to suits in connection with Medical-Practice Act	4 50	
		$45 00
July, 1886, *Meeting*—for quarter ended June 30, 1886—		
Chicago Legal News, Printing Briefs, Williams vs. People	$36 00	
Court fee bill, People vs. Banton	2 00	
		$38 00
October, 1886, *Meeting*—for quarter ended September 30, 1886—		
Barnard & Gunthorpe, printing	$73 50	
Expenses incident to suits in connection with Medical-Practice Act	24 40	
Brown, Pettibone & Kelly, printing	8 00	
		$105 90
Total disbursements	$254 90	
Balance on hand September 30, 1886	837 47	
		$1,092 37

Respectfully submitted,

A. L. CLARK, *Treasurer.*

Audited and approved:
W. R. MACKENZIE, }
W. A. HASKELL. } *Auditing Committee.*

APPENDIX

TO THE

NINTH ANNUAL REPORT

EMBRACING

Report on the State Sanitary Survey.
Vital Statistics of Illinois and Coroners' Inquests.
Meteorological Tables.
Report on State Medicine in 1886.

Illinois State Board of Health.
Springfield, Ill.
1887.

STATE SANITARY SURVEY AND HOUSE-TO-HOUSE INSPECTION.

In October, 1883, the State Board of Health took the first formal action which led to a systematic house-to-house inspection and sanitary survey of the State. The details of this work—copies of the circular-letters, blanks, forms, schedules, instructions, etc.—and its results up to the close of 1885 are given in full in the Eighth Annual Report, pp. 83–282 of the Appendix.

The work was resumed in the spring of 1886 and has been continued without interruption until near the close of the year when it was suspended by cold weather. An aggregate of 499,832 inspections and re-inspections have now been made—embracing every important item pertaining to the sanitary status of 335,547 premises in 398 cities, towns and villages with an aggregate population of 1,677,734 inhabitants. In all but three of these places work was begun prior to 1886, but at the close of last year the aggregate number of inspections—exclusive of Chicago—was only 224,360, so that the increase during 1886 has been considerably over 100 per cent. A large number (164,285) of these, however, were re-inspections—the actual number of additional premises inspected amounting to 113,162.

The following gross totals, covering both years of the house-to-house inspection, will give some idea of the magnitude and character of the work accomplished:

Total number of original inspections	335,547
Total number of re-inspections	164,285
Aggregate inspections and re-inspections	499,832
Total number of defective conditions and nuisances disclosed	643,780
Total number of such conditions and nuisances remedied or abated	598,720

Character of defective conditions and nuisances:

Sites of houses—undrained, damp, etc	30,030
Basements and cellars—damp, unventilated, unclean, etc	225,040
Cesspools, sinks and drains—foul, untrapped, leaky, etc	20,158
Privies—foul, overflowing, improperly located, etc	177,952
Water closets—untrapped, foul, etc	4,847
Yards—damp, unclean, filthy, etc	91,211
Water supply: Cistern—suspected, bad, etc	28,592
Well—suspected, bad, etc	34,196
Nuisances—by animals	13,945
—public	3,151
—private	14,658

Enormous as is the aggregate of defective sanitary conditions and nuisances disclosed by these inspections, their practical value is shown by the number of such conditions remedied and nuisances abated—fully 93 per cent. That this has had a beneficial effect upon the public health and welfare is beyond question. The subject has been tully discussed in the comments upon the first years's work.

FOLLOWING are the sanitary surveys of 15 additional cities and towns, made or perfected in 1886:

SANITARY SURVEY OF ALTON.

By Prof. William McAdams.

Location, Population and Climate.—Alton, the most important town of Madison county, is situated on the right bank of the Mississippi river, in latitude 38 deg. 32 min. north, longitude 90 deg. 12 min. west. It is three miles above the mouth of the Missouri river, twenty miles below the mouth of the Illinois, and the same distance above the city of St. Louis. Beside the river highway, three railroads enter the city: The Chicago, Alton & St. Louis, the Indianapolis & St. Louis and the Chicago, Burlington & Quincy.

The town was founded in 1818, and incorporated in 1837. Its population in 1870, according to the United States census report, was 8,665; in 1880, the population was 8,975. The present estimated population is about 11,000, about 1,500 under 5 years of age. In 1880 the number of persons of native birth was 6,952, of foreign birth, 2,023. The number of negroes and mulattoes in 1870 was 380; in 1880, 595. The present estimated number of persons of native birth is about 7,700, of European birth, about 2,650; negroes and mulattoes, 650; Asiatics, 2.

No meteorological observations have been regularly recorded in the city.

Topography.—The surrounding country might be called hilly, the upper general level near the city limits being furrowed by deep ravines, that connect with short valleys which quickly discharge the rainfall into the Mississippi. There are several of these short drainage valleys having a southerly course, and which, near their entrance into the river, have a depth of over 150 feet below the general level of the surrounding heights. The upper part of the sides of these valleys is a peculiar light-colored, finely comminuted, marly clay, known to geologists as loess, but called by some "bluff clays," since it is only found in any considerable quantity along the course of rivers. At Alton the loess is from 50 to 75 feet in thickness. The greater part of the sides of these valleys is, however, of limestone. The valleys were, no doubt, made during the latter part of the glacial epoch, by the erosive power of vast quantities of ice, carried by the receding waters into the valley of the Mississippi. Of all the sedimentary deposits, perhaps there is none so clean and free from deleterious sanitary conditions as the loess.

There is very little low ground and no marshes in the city limits, but just below where the Mississippi makes a bend to the south, there commences a tract of somewhat low and exceeding fertile land, lying between the bluff and the river, and known as the "Great American Bottom." It is, however, mostly under cultivation, and excepting perhaps a short time in the spring, there are no low moist lands in the vicinity.

The high lands in the city and vicinity are about 200 feet above the Mississippi at the low water stage, and about 485 feet above the sea level. The altitude of the low lands or bottoms above the sea level is something over 300 feet. The average is nearly 400 feet above the sea.

The direction of the Mississippi river at Alton is east and west, and the trend of the bluffs in the same direction.

There are no forests near the city, it being bordered by grass lands, farms and market gardens.

The topographical features of Alton and vicinity are eminently favorable from a sanitary view. The site of the city being originally hilly, the grade has been improved, but the original conformation has not been materially changed. The original water courses passing through the city are small, and have been modified, one, the Piasa creek, being arched with stone and used as a sewer through the main business part of the city. The streams, however, have not been materially diverted. The general surface slope of the city is south toward the Mississippi.

Only a small part of the city is what is called made-land; about the mouth of the Piasa creek it has been filled to the depth of twenty feet or more with clay and rock, and now forms part of the levee, covered with Macadam. This is a public highway and not built upon to any extent. Beside the Piasa creek there is another small stream—Shield's branch—emptying into the Mississippi in the lower part of the city. The bed of this stream is about 40 feet in width. Both these streams carry off water rapidly, the banks being of rock or hard ground. There are no deposits of organic matter, nor dams, nor falls, except over ledges of rock in places.

The drainage of the city, which is almost entirely of a surface character, is either connected directly by the street gutters with the river, or goes into the streams named above and is quickly carried away. There are a number of what are called "sink holes" in the city; these have been formed by the subsidence of the overlying clay into fissures in the underlying limestone. These fissures form natural subterranean lines of drainage beneath the city. The rainfall that goes into these sink holes is quickly carried through the rock fissures into the river. Sometimes, however, the fissure at the bottom of the sink hole becoming choked up, and the water no longer having an outlet, becomes a pond. The water in these ponds seldom becomes so stagnant as to emit any odor. Where these ponds have become a nuisance in the city, they have been drained or filled up by the authorities.

No part of the city is subject to overflow. There are few, if any, wells, the water from which is used for drinking purposes.

The geological site of the city and vicinity belong to the Quaternary, and for the most part consists of the light buff clays or loess, so commonly seen in the upper part of this system. The maximum thickness of the loess in the city is about 75 feet, and on the bluff immediately along the river it lies directly on the rock, the underlying drift clays being entirely absent or only slightly exposed. At a short distance from the river the underlying clays are seen. At the city limits, two miles north, in a deep railroad cut, the brown and bluish clays are seen beneath the loess, and have a thickness of 15 to 20 feet.

The bluish clay here presents the usual rounded boulders with sticks, portions of the bodies of trees, and remains of other vegetation of the glacial period. These underlying clays rapidly thicken up as one approaches the level highland in leaving the river, while the loess, on the contrary, rapidly thins out and can scarcely be recognized on the prairies a few miles away. The loess is unstratified, and from the peculiarity of its constituents, forms its own drainage. It contains no "sipe-water," furnishes no springs, nor can wells be successfully made in it. It contains no organic remains of any kind, except a few fossil teeth and bones of animals of the glacial epoch. It is the cleanest, purest and most healthful deposit of any age for the site of a city.

The rocks which crop out in so many places in the city, and which form the greater part of the bluff, belong to the subcarboniferous, and lie just below the coal. The rock is the same as that quarried in St. Louis, and is known to geologists as the St. Louis limestone. It is a white, durable rock and extensively used in building, as well as for making white lime.

The order of succession of the underlying strata from above downward is as follows:

1. St. Louis group of the Subcarboniferous.
2. Keokuk " " "
3. Burlington " " "
4. Kinderhook " " "
5. Hamilton " " Devonian.
6. Niagara " " Upper Silurian.
7. Cincinnati " " Lower Silurian.
8. Trenton " " "
9. St. Peter's sandstone of the Lower Silurian.

The aggregate thickness in the maximum is something like 1,500 feet. Owing to an upheaval, all the rocks named can be seen as we ascend the Mississippi river from Alton to the mouth of the Illinois river, or within a distance of about 30 miles. A well bored at the glass works, in the lower part of the city, to the depth of something over one thousand (1,000) feet, did not penetrate the St. Peter's sandstone, and hence was a failure as an artesian. The St. Peter's sandstone is the great water-bearing rock of the strata above named, yet many of the limestones have permeable fissures. This is especially true of the St. Louis and the Burlington, the latter being noted for the springs that gush from the outcrop.

The dip of the strata in the city and vicinity is toward the east and northeast, and in some places reaches the inclination of nearly one hundred (100) feet to the mile.

There are no coal mines in the city. The coal measures proper are just outside the city limits to the north and east. In the immediate vicinity, coal is mined extensively, and is of good quality. The vein is between two and three feet in thickness and belongs to the lower coal measures.

The surface soil in the city and vicinity is a light loam, and when disturbed seems to have no malarial effect. The rocks are full of fissures, but there are no gravel beds through which water might flow. No disease is known to have been due to the soil, or geological formation, nor has the spread of any epidemic been connected with the flow of the underground water.

WATER SUPPLY.—The source of the water supply is derived from the Mississippi river. The mode is known as the Holly system. There is no town, or means of contamination, above the source of supply that would affect it in any way. The water is brought directly from the river in iron pipes, and the capacity of the conduit is 16 inches and 6 inches in the mains. Besides a filter in the conduit, there are settling reservoirs of the capacity of about 500,000 gallons. The average amount of water per diem flowing into the mains is about 400,000 gallons, furnishing an average of nearly 40 gallons to each inhabitant. The water mains extend through the main portion of the city, yet nearly every residence has a cistern for the storage of rain water and it is used largely for domestic purposes. Neither wells nor springs are in general use.

The chemical analysis of the public water supply is favorable sanitarily, and there is no offensive odor or taste. There is an average of at least 200,000 gallons in the reservoirs, available in case of fire. The city is not supplied with public fountains, but there are three public watering troughs for horses and other animals. There are no public baths.

DRAINAGE.—The area included in the city limits is about seven and one-half ($7\frac{1}{2}$) square miles. Nearly one-third of this is closely built upon, as compared with the suburban residences. The drainage of the city is good, and there are no cellars that are subject to an intrusion of soil water.

There are three large outlet sewers into the Mississippi, one of the diameter of 9 feet, one of 6 feet, and one of 4 feet. One of these sewers is circular, one square and one rectangular. The sewers do not retain any deposit, but are kept clean by the rapidity of the water-flow.

Although a large part of the area of the city is built upon, a considerable part is not sewered, except by surface drains, which, however, answer the purpose, as the capacity is sufficient even during storms. No attempt has been made to utilize the sewerage.

There are no municipal regulations concerning the drains from houses to the main sewer, and no odors are to any degree perceptible from the openings or outlets.

Streets, Alleys and Public Grounds.—The general width of the roadways of the streets is forty (40) feet; of the sidewalks ten (10) feet; alleys twenty (20) feet. Sidewalks are of stone, brick and plank, and are from 4 to 10 feet in width. The total length of paved streets in the city limits is about thirteen (13) miles. The material used is macadam with stone curbing and gutters. The total length of the unpaved streets is seventy-two (72) miles. The soil of the streets is a yellowish, buff colored light clay. The streets are very rarely unduly wet in the spring of the year. The unpaved streets are higher in the center; graded toward the gutters. There are no underdrains. There are about 17 miles of wooden foot pavement, 24 miles of stone flagging walk, 3 miles of brick pavement.

The streets are cleaned regularly by the city engineer, the matter deposited on the roadway and in the gutters being srcaped up with hoes, shoveled into wagons and hauled away. The same is repeated whenever necessary. Streets are sprinkled only in the business part of the city. The deposits of garbage, ashes, etc., in the alleys are regulated by ordinance, and removed in wagons. The arrangement seems to be satisfactory.

Shade trees are planted along many of the streets, especially in the residence part, and the streets leading out of the city. The trees are planted between the sidewalk and roadway and are mostly hard and soft maples with some elms. They are considered beneficial to general health.

Three public parks belong to the city—Triangle Park, State Street Park and Seminary Park. The first two are planted with trees. The last is now being graded. One thousand dollars was expended on it last year, and $1,500 is appropriated for it this year. The parks are all on high ground and overlook the Mississippi river. There are no fountains in the parks, nor public urinals. The parks are under the management of the superintendent of streets. There are also two other open public squares, on one of which is the city hall.

The railroad crossings in the city are provided with special watchmen, who give warning of coming trains. No serious accidents have happened.

Habitations.—There are 2,500 dwelling houses in the city limits, seven-eighths of which are occupied by their owners. The average occupancy is about five persons to each dwelling. Few, if any houses are overtenanted. No diseases have been observed which seem to be due to overcrowding, or unfitness of habitation. There are no municipal regulations concerning overoccupancy.

There are city ordinances relating to the manner and material of which houses shall be built within the fire limits. There have been no houses condemned during the past year, as being unsafe, or unfit for habitation for sanitary reasons.

Only a small part of the dwellings have connection with the covered sewers. The rain water flows off in the surface drains.

Very few, if any, dwellings have springs, wells, cisterns or privies in the basement. A large majority of the dwellings are isolated, with sufficient yard, or space about them. As a rule, the houses have basements or cellars. Few buildings are too low. Only a small per cent. of the basements and cellars are drained, from the fact that it is not necessary. A small per cent. of the cellars are damp in the spring. As a rule they are mostly dry during the year. Less than one-tenth of the houses are furnished with the proper bathing facilities.

Cellars under business houses, and to a small extent under dwellings, are used for storing fuel and vegetables, but ashes and sweepings are not deposited there. The ground under the basements, as a rule, is not cemented. The height of the buildings, as compared with the streets, is about two-thirds.

No ill effects have been observed from arsenic paper in sleeping and living rooms, nor from dyed wearing apparel.

GAS AND LIGHTING.—The city is lighted by gas, and the gas works are located on Belle street, not very far from the business center of the city. The odor from the works, although not especially complained of, is often a nuisance to the immediate neighborhood. The lime and copperas process of purification is used. The refuse is mostly used in filling up depressions in the adjacent lots. The gas is furnished at three and one-half ($3\frac{1}{2}$) dollars per thousand feet. The gas may be said to be fairly good, but not entirely satisfactory.

Nearly all the prominent streets are lighted. There are 107 gas lamps on the streets. Alleys are not lighted. Many business houses are lighted by gas, but only a small per cent. of the dwellings.

No precautions are taken to ascertain the grade of lighting gas, or oils, and no especial restrictions placed on the sale of kerosene. No serious accidents have occurred from explosion of coal oil in the last five years.

The electric light is not in use, although preparations are in process for its introduction.

GARBAGE.—Ordinances provide for the removal of all garbage and excreta, and penalties are attached if parties fail to remove the same, after being notified by the authorities. The law is fairly complied with. Kitchen refuse is not required to be removed in covered vessels. Garbage, etc., is hauled away once a week. The arrangement seems satisfactory. Garbage is not destroyed by fire, and dead animals are either buried or dumped into the Mississippi river and carried away.

No cess-pools are in use. The sewers are frequently flushed from the fire-plugs. Dwellings depend on privy vaults. There is no especial ordinance for the cleaning and construction of such vaults, unless they are complained of as nuisances.

No contamination by privy vaults, of cisterns nor of wells, which are rarely in use, has been brought to notice.

Markets and Food Supply.—The markets of the city are established by custom. There are nine (9) private meat markets. The city has no public building for markets. Grocery stores also sell salt meats, fish and vegetables in season. There are seventy-three (73) family grocery stores. It is the duty of the city marshal to make inspection of food placed on the market when his attention is called to the matter, or he has reason to believe unwholesome food is being offered for sale.

The supply of fresh meat is excellent as regards quality and quantity. No meat, nor fish, has been condemned during the past year. Vegetables are brought to town in wagons from the immediate vicinity. The supply of fruit and vegetables is good. Fruit and vegetables are allowed to be sold without regard to any special regulations. Producers can sell directly to the consumer. There has been no prosecution under the State law in regard to these matters. No oleomargarine is sold as butter.

Slaughter Houses and Abattoirs.—Animals for the city markets are obtained from the surrounding country and from the Stock Yard at St. Louis. The number slaugtered during the past year for city consumption was as follows:

		Cost.
Beeves	4,000	$200,000
Hogs	10,000	132,000
Sheep	4,000	16,000
Calves	3,000	18,000
Total cost of meat	....	$366,000
Total cost of fresh fish about	....	$3,000

A considerable number of hogs were also packed for shipment. No animals have been condemned the past year, and the system seems to be satisfactory. Three years ago a butcher was fined heavily for selling diseased meat.

Slaughter houses are erected at private expense and are mostly outside the city limits. Fat and tallow are rendered at the slaughter houses; bones and offal are sent to a rendering establishment outside the city. But little refuse is fed to hogs, and the meat of these is not considered as good as corn-fed hogs.

MANUFACTORIES AND TRADES.—There are no manufactoring establishments in the city that are considered nuisances. There are a number of large establishments, such as glass works, woolen mills, tobacco works, plow factory, agricultural works, mills, breweries, etc., etc., employing several thousand men, women and young persons. Nothing from these factories pollutes the water supply, nor do they emit noxious gases or vapors that generate disease among the workmen.

Women and girls are employed in the woolen mills, the tobacco factory and the pickle factory, but do not seem to be subject to any disease due to their occupation. Their hours for labor are from 7 to 12 in the morning and from 1 to 6 in the evening.

Children are employed in the factories named above. They also work ten hours. The youngest of these children are from ten to twelve years. No disease seems to be due to their employment.

The ventilation in these factories seems to be satisfactory, and the same may be said of the arrangements for the privies and water closets.

HOSPITALS AND PUBLIC CHARITIES.—There is but one hospital in the city, the St. Joseph's, under the care of the Sisters of Charity. Number of beds, 25. A new hospital is in course of erection with 50 beds. If the patients are unprovided with means, the city or county pays the expense of their care.

There are no free dispensaries. The hospital accommodations seem to be satisfactory. Some paupers are sent to the county poor farm. Quite a number of suffering or indigent persons in the city are provided for by the county. Very few needy persons suffer during the winter owing to this charitable arrangement.

The annual cost to the township for its public charities amounts to about $5,000. The poor are attended by the county physician. There is no ambulance system.

POLICE AND PRISONS.—The police force is appointed annually by the mayor and confirmed by the council. The force numbers ten (10), including the captain of the night police and city marshal. There are six night patrolmen and a captain.

The percentage of sickness among the police is very small.

There are two lock-ups, with separate cells for the sexes. The air space for average occupancy is 500 cubic feet per cell. The sanitary care of the prison is in the care of the marshal. There is fair ventilation in the city prison, but the privy arrangements and bathing facilities are only ordinary.

The average number of prisoners is thirteen per month. Vagrants are kept separate from prisoners. A rock pile is provided for the encouragement of industry among vagrants.

The jail is in the basement of the city hall. It is heated by a large stove in the hallway. The cells are 4 by 6½ and 7 feet high. No epidemics have occurred. The meals are furnished from the hotel table. There are no houses of prostitution known as such.

Saloons.—There are forty-two (42) places in the city at which intoxicating drinks are sold. One of these is a beer garden. There is annually sold in the city for consumption as follows:

280,000 gallons beer	costing $70,000
25,000 " distilled spirits	" 50,000

This does not include wines, bitters and other drinks. The whole amount of drinks sold is about $150,000 worth. This represents the wholesale cost to the dealers.

The number of cases brought before the police court for drunkenness was 80 during the past year. One man died of delirium tremens.

The laws in relation to the sale of intoxicating drinks have not been very strictly enforced during the past year.

Fire Establishments.—The fire department is organized by city ordinance, and the firemen are paid. Fire alarms are given by telephone; this arrangement, however, is not always satisfactory, especially in the night time. There are three hand reels, and two horse reels, or hose carriages, and one hook and ladder. The water is obtained from plugs connected with the water-works, which gives a pressure of 165 pounds to the square inch. There are no patent fire extinguishers.

The fire department is in very good condition, and its efficiency seems to be satisfactory. The force consists of one fire chief and eight competent men. They have five excellent and well trained horses. The firemen are supposed to be always near their respective hose houses, of which there are two, in which they sleep.

The proportion of sickness among the firemen is very small, nor has there been any serious accidents among them. Their character for efficiency and sobriety is good.

The loss of property last year by fire was $64,475. There were 35 fires last year; 17 from the use of dangerous and unfit lighting materials, apparently, and from heating apparatus, 1 from spontaneous combustion, 5 from locomotive sparks, and 12 from unknown causes.

The last year's expenses for the city fire department was $4,500.

Cemeteries and Burials.—There is but one cemetery in the city limits, and the majority of interments are made in it. There are two others on the outskirts of the city. It is generally believed that the sub-soil drainage from land containing graves contaminates springs, wells, etc.

The average depth of the graves is about six feet. The soil is a light clay, and being on high ground is comparatively dry.

Few vaults are used, and there has been no nuisance complained of, or evil effects observed from these cemeteries.

Burial permits are required.

Public Health Laws. Regulations, Sanitary Officials.—A health committee is appointed by the mayor for a term of one year. Under certain contingencies the committee have police powers. They make an annual inspection of the city, and oftener if deemed necessary. They meet only when urgent necessity requires.

The committee take cognizance of defective drainage or sewerage; contamination of water supply; condition of privy vaults; removal of garbage and cleaning of private premises; condition of streets and alleys; methods of burial; disposition of night soil and other matters pertaining to the general health.

Persons having small-pox or other contagious diseases are isolated, and precautions taken to prevent the spread thereof. The board has power to remove persons sick of contagious diseases to special hospital or elsewhere. The measures taken by the committee to restrict contagious and infectious diseases, when necessary, are: To close public schools and prevent public meetings; to quarantine any house where such disease exists, and generally to enforce precautions as provided by city ordinance.

Vaccination is generally enforced. Births, marriages and deaths become matters of record, by reports of physicians and clergymen to the county clerk.

Registration and Statistics of Death and Disease.—Burials are recorded by the proper authorities. Local statistics of cause of death are kept by the attending physician. Contagious diseases are reported to the health committee.

Neither small-pox nor cholera has been epidemic here of late years. Scarlet-fever and typhoid-fever have occurred, but the latter has not been epidemic, and the mortality of both these diseases was light.

Malarial diseases are less prevalent than formerly. Typhoid continues to a limited extent.

Municipal Sanitary Expenses.—The appropriations for sanitary purposes for the past year came from the special and incidental fund, and provided for sewerage, setting out trees, cleaning streets, removal of garbage, construction and care of public parks, markets, drinking fountains, water-works, repair of public buildings, expenses of board of health and quarantine purposes. The whole amount was $13,000.

Public Schools.—The total number of scholars registered in the public schools last year was fourteen hundred (1,400); average attendance eleven hundred (1,100). There are five (5) buildings, eleven (11) grades, and twenty-six (26) school rooms.

School opens at 9 A. M. Recess at 10:45 to 11, and morning session closes at 12 o'clock M. Afternoon session opens at 1:30, recess from 3 to 3:15, and school closes at 4:30 P. M. The pupils are not confined to the room longer than one and a half hours, and to the seat longer than three-fourths of an hour. The teachers seem to favor two sessions per day. The lower grades sit and the higher grades stand during recitation.

It is optional with pupils to study out of school hours. The time for exercise and holidays are one-half hour each day during school hours, exclusive of noon hour, and the holidays of two weeks, Christmas, and ten weeks in summer.

Exercise is compulsory only on pleasant days during recess. Mild means of correction are generally employed; corporal punishment, if necessary.

Vaccination is not insisted upon. No small-pox has occurred among scholars or teachers. Great pains are taken to prevent the attendance of children from families in which infectious or contagious diseases prevail.

Diseases of the eye have been observed, such as short sight, which seems to be due to the bad arrangement of light in the school room.

With regard to large and small school buildings, it would seem in this city that, with a competent superintendent, the larger buildings are much better managed in all respects than the smaller ones. Observations in regard to the advisability of the education of the sexes together seem to be largely in favor of the system.

The school buildings are of brick, and located on high, well-drained ground. Two have been recently erected, at a cost of $8,000 for one and $9,000 for the other. Each school is erected upon a lot of about an acre, which is used as a play ground. These are one three story, three two story and one one story buildings. There are 23 rooms heated by furnace and three rooms by stove. The rooms are kept at a temperature of about 68° F. in winter time.

The schools are ventilated by means of the windows in winter, and by windows and doors in summer. The ventilation, however, might be improved. The arrangements for the privies and water-closets are good. Two basements are used for water-closets, and all are used for storing fuel. The basement is ventilated separately from the rest of the building.

The water supply is Mississippi river water from the water-works, and is good and abundant.

The rooms are sufficiently, but not always properly, lighted. There is about 150 square feet of light that enters each room. Distance of pupils from black-boards, maps, and from which they are expected to read, is about 15 feet.

One building is so arranged that pupils may exercise in basement during bad weather. In this building are seven rooms. There are opportunities for drying clothes when wet. Each school yard contains about an acre, and the grounds are kept in fair order.

Good patterns of desks are used, and seem to be satisfactory.

There are six private schools in the city, five Catholic and one school under the auspices of the Evangelical German church.

SANITARY SURVEY OF ANNA.

By JAS I. HALE, M. D.

LOCATION, POPULATION AND CLIMATE.—Anna is situated on the Illinois Central Railway, near the geographical center of Union county, and about latitude 37½ N., and longitude 12½ W., 36 miles north of Cairo, and exactly on the divide of drainage of the Southern part of the State into the Mississippi and Ohio rivers, the former being about twelve miles to the west and southwest, and the latter about 20 miles southeast. Anna is about 200 feet above the level of the river junction and 500 feet above sea level. It is in the midst of a well-improved agricultural and horticultural district. It was founded in 1854 by Winstead Davie, the name of whose wife it bears, and was first incorporated as a village in 1855, as a town in 1865, and as a city in 1872.

In 1860 it contained 650 inhabitants; in 1870, 1,140; in 1880, 1,490; and by the last school census its present population is a little over 2,000, of which the proportion of native to foreign born stands about 18 to 1, with about 8 resident negroes.

A spur of the Ozark mountain range crosses the southern end of the State some 5 miles north of the city, and forms a considerable barrier to the cold winds and storms which usually come here from the north-west; it also partially checks and deflects the gulf breeze, thus keeping the winter temperature several degrees higher, and that of the summer lower than only a few miles further north; giving us the mildest and most salubrious climate in the State.

TOPOGRAPHY.—The site of the city being on the side and slope of a low mountain range, the surface is gently undulating, and the surrounding country slightly hilly. There is no marsh or low land subject to overflow within many miles of the city. In the immediate vicinity the surface rocks are lime and sand-stone, irregularly intermixed, with the former predominating. There are no regular strata and no continuous dip in any direction. The surface soil is a light loam on a heavy yellow clay bed. Both the location and the geological formation seem to be quite favorable to health.

WATER SUPPLY,—The water supply of the city is derived entirely from underground cisterns and wells, the ratio being about 8 or 9 of the former to 1 or 2 of the latter. The wells vary in depth from 25 to 75 feet; the water being always found beneath a varying stratum of small boulders and gravel in a bed of pure whitish yellow sand, through which it rises to a depth of 5 to 15 feet. The water is generally quite pure, there being little or no surface infiltration. The wells are not affected by rains except in a few of the lowest localities.

DRAINAGE AND SEWERAGE.—There is no regular system of drainage or sewerage; the surface being sufficiently undulating to form good surface drainage from all localities.

STREETS AND ALLEYS.—There are about 2½ square miles embraced in the city limits, near the center of which the business and denser portion of the city is built. The streets are from 66 to 75 feet in width, and the alleys 16 feet wide. None of the streets are paved but graded from the center to the drainage ditches on the sides and the principal ones are macadamized and graveled.

The side-walks vary from 3 to 9 feet in width, according to locality, and are constructed of stone, brick or wood. On many of the streets a considerable number of trees have been planted, mostly elm and hard maple.

PUBLIC GROUNDS.—The grounds of the Southern Illinois Fair Association being within the corporate limits and quite convenient, these are used as a city park. They embrace about 25 acres and are well improved with buildings, water supply, shade trees, drives and walks. There is also an artificial lake of some 4 acres extent filled with clear water and stocked with fish.

HABITATIONS.—The city lots are generally 66x135 feet and, as a rule, there is but one house on each lot; many residences and grounds occupying two or more lots, and a few with large areas. There are about 400 houses within the corporation, of which about 90 per cent. are occupied by the owners. The average occupation of each house is about 5 persons. There are but few tenement houses and they are small and not overcrowded.

The business houses are mostly of brick, 2 and 3 three stories high and but few with basements or cellars. Within the business portion the construction of wooden buildings is prohibited.

The residences are mostly of wood, 1 and 2 stories in height. Very few have cellars and none have water closets; though in a few the dry earth closets are used. None have any special means of ventilation other than doors and windows, and in some, open grates. They nearly all have ample yards, both front and rear, and very many have small fruit and vegetable gardens attached.

GAS AND LIGHTING.—There are no gas-works in or about the city, but a few business houses have gasoline gas generators and light with the gas thus prepared. The central business portion of the city has a number of lamps maintained by private parties, and most of the churches have lamps at their fronts.

Petroleum oil is almost exclusively used for lighting purposes, and its sale has no supervision. No accident has occurred from its use.

GARBAGE AND EXCRETA,—The deposit of garbage on the streets and alleys is prohibited by ordinance, though it is frequently done, especially on the alleys during the winter, but removed in early spring. Its removal is at the expense of residents. It is usually taken out to vacant lots and dumped into gullies and sinks. A considerable portion is burned on the premises.

Dead animals are hauled without the city and buried or burned; from 25 to 50 hogs and a few cattle and horses are so disposed of annually.

Privies are used exclusively by all residents, the vaults being from 4 to 10 feet deep. They are generally emptied and disinfected in the early part of each summer. The soil being an almost impervious clay, and the privies and wells or cisterns being placed at the greatest possible distance from each other, no water supply has been polluted. Lime and copperas is quite freely used about the privies on most premises.

MARKETS AND FOOD SUPPLY.—There is no public market under control of the city; the private dealers supply the demands. The supply of all kinds of food is equal to the demand. Supplies are almost wholly derived from the immediately surrounding country, and are, as a consequence, always fresh.

Producers may, and largely do, sell direct to the consumers without tax or license.

Vegetables and fruit are largely used, being extensively produced in the locality; they are abundant and cheap at nearly all seasons. Fresh meats, fish and fowls are plentifully supplied and sold at reasonable prices.

The milk supply is abundant, good and cheap. The cows have good pasturage for full three-fourths of the year and are fed on good corn, oats, bran and hay as they may require. There has been no cause for complaint or prosecution for violation of the State law or local regulation regarding foods.

SLAUGHTER HOUSES AND ABATTOIRS.—There are two slaughtering establishments in the outskirts of the city, both under private control, and at which about 300 cattle, 200 sheep and an equal number of hogs are annually slaughtered for ready consumption. A large number of dressed hogs, probably 2,000 to 3,000, are annually packed by a few parties.

All animals are procured from the surrounding country and are driven to the place of slaughter on foot. They are not subjected to official inspection either before or after slaughtering. In warm weather the meat is cooled and kept in refrigerators until disposed of for consumption.

Some of the offal from the slaughter houses is fed to hogs and some decomposed with earth and manure and used as a fertilizer. The yards are drained into natural waterways flowing away from the city. The refuse is not always immediately rendered, but sometimes allowed to accumulate for several days, particularly in cold weather.

MANUFACTORIES AND TRADES.—The manufactories embrace two flouring mills, a planing and wood working mill; a pottery, two wagon and plow shops, two lime kilns, and others of minor note. None are considered as a nuisance, neither do the employes seem to have their health effected by such employment. The space, ventilation, privies and other accommodations seem to be quite ample and satisfactory.

POLICE AND PRISONS.—The city marshal is the only regular officer, but others are appointed from time to time as occasion may require. The marshal acts as inspector of nuisances and sees to their abatement.

There are no licensed saloons or other places in the city where intoxicants are publicly bought or sold, and but a small amount is probably sold clandestinely at drug stores or other places. There are no houses of prostitution or recognized prostitutes in the city.

There is one lock-up, or calaboose, used for both sexes when required, but seldom in use. The commitments do not average more than three to six annually, and then only for a short time. The cells are poorly lighted and ventilated.

The number of cases brought before the police magistrate is about ten to twelve annually.

HOSPITALS AND PUBLIC CHARITIES.—The city has no hospital or other public charity under its control, but the Illinois Southern Hospital for the Insane is in the northeast part of the corporate limits. Its capacity is about 600 patients, and is generally full. There is also a county hospital two miles east of town, where the poor of the county are provided for.

FIRE ESTABLISHMENTS, ETC.—The city has no organized fire establishment, and no apparatus except a few hooks and ladders. A considerable number of Babcock and other extinguishers are owned by private parties, and some have force pumps in wells and cisterns with hose ready for adjustment.

Except three public wells in different parts of the city, there is no water supply for fire purposes other than that from private wells and cisterns. In the central and business portion, wooden buildings are prohibited by ordinance.

CEMETERIES AND BURIAL.—There is one cemetery within the southeastern limits of the city, embracing an area of 8 square acres, in which interments are now made at the rate of about 22 annually from the city and surrounding country. It now contains probably about 400 graves.

From its location, topography and soil it is not possible for its subsoil drainage to contaminate any source of water supply. The average depth of graves in about 5½ feet. The soil is a compact yellow clay and generally dry, No evil effect has been observed from the cemetery.

Public funerals of persons dying of contagious diseases are prohibited. There is no receiving vault and no permits are required other than selection of lot.

PUBLIC HEALTH LAWS, REGULATIONS, SANITARY OFFICIALS.—The city board of health is appointed annually by the mayor, who is ex-officio chairman, besides whom it consists of two members of the city council and two resident physicians. The board has ample power to act in its appropriate sphere, both as an advisory and executive body. It meets only on the call of the chairman, and acts on complaints. It does not register vital statistics or require mortuary reports.

Vaccination is not at all times enforced, but reasonable care is otherwise taken to restrict contagious and infectious diseases. No epidemics have occurred in the past ten years.

REGISTRATION.—No registration of deaths or disease has been kept or required. Matters pertaining to vital statistics are only recorded through returns to county clerk and they are not complete or full.

We learn that a local system of registration is to be inaugurated at an early date.

All contagious and infectious diseases are required to be reported to the board of health or its chairman. The ratio of crime to population is about ⅛ of 1 per cent..; of disease 1½ per cent., and of death about ⅞ of 1 per cent. annually. Epidemics are practically unknown.

MUNICIPAL SANITARY EXPENSES.—No special appropriations are made for sanitary purposes, but when required the contingent fund is drawn on to meet such expenses. Only about $25 to $50 annually is required.

The total municipal expenses for the past fiscal year was about $4,000, which is about the average annual expenses. A large part of this is expended on streets and sidewalks.

Shade trees on the streets are generally planted and cared for by the owners of adjacent property, and the care, improvement and repairs of the fair grounds and park are paid for out of the funds of the fair association.

The aggregate amount paid out by individuals for sanitary purpose would probably not exceed $200; that is, improvements and repairs excepted. The expenses of the board of health will average about $10 per year.

PUBLIC SCHOOLS.—The school population numbers 555, of which 287 are males and 308 are females. Of this number 438 are enrolled, and the average daily attendance is 308. There is one school of six grades. The primary grade being quite large, is divided into two sections. Eight teachers are employed: three primary, one intermediate, one secondary, one grammar and two in the high school department. The sexes study and recite together.

Two sessions are held daily, with a long intermission at noon, 1½ hours, and a short recess 15 to 20 minutes in each session, so that pupils are not confined to the room more than one and a half hours from one intermission to another. The pupils generally recite standing, but not always. Variations are made according to the length and character of lessons. Competition is not a feature of the system of instruction, in fact, it is prohibited.

Vaccination is not now enforced as a condition for admission, but would be if occasion should demand it. No cases of smallpox have developed among the scholars or teachers. Children from families where contagious or infectious diseases exist are prohibited attendance for the time of such existence. About 32 per cent. of absence is caused by sickness, as ascertained by excuses from parents.

No special observations have been taken as to disturbances of the heart or respiratory organs of those who occupy the upper room; neither have any examinations been made to determine the relative frequency of visual defects. Moral suasion, isolation and suspension are the methods used for correction, and prove satisfactory.

The principal school building is a brick structure, three stories and basement. It contains five rooms for study besides recitation rooms, cloak rooms and halls. The upper floors are reached by two broad, easy stairways, one on each side, used by the sexes separately. The building is heated by two hot-air furnaces, which are situated in the basement, where also the fuel is stored. The mean temperature of the rooms is about 65 deg. F. About 40 tons of good soft coal are consumed annually.

The building is ventilated by a series of registers or openings through the base-board into flues under floors. These flues lead to a large stack surrounding the smoke or draft flue from the furnaces. This method has proved defective and unsatisfactory, and the windows are used as auxiliary.

The four rooms on the first and second floors have comfortable seating capacity for about 60 scholars each, and the upper hall for about 150. The rooms are all well lighted, the smaller ones each having about 100 square feet of light surface, and the larger one about 175 feet. The rooms are all furnished with modern desks and movable seats.

The students maintain about an average distance of eight feet from the blackboards and charts while reciting, and generally recite standing.

This building was erected in 1869, and cost, with equipments, about $25,000. It is located on an elevated well drained lot of about half an acre area. It is quite accessible, yet isolated from other buildings. Two large underground cisterns furnish an abundant water supply of good quality. The grounds are fenced and shaded, and kept in order by the board.

There is also a one-story frame school house situated on the south side of town just within the park; this is used for the first division of the primary grade. The building is quite comfortable: heated by stoves and well lighted. Two of the primary teachers are here employed, with an average attendance of 60 pupils.

The Union Academy of Southern Illinois is also located within the city. It has a large two-story frame building of four rooms, quite new, well-equipped and well located. The average attendance during the four years which it has been in operation is about 75 per term. Four to six teachers are regularly employed in giving instruction in its various departments.

Sanitary Survey of Beardstown.

By Henry Ehrhardt, M. D.

Location, Population and Climate.—Beardstown, latitude 40 deg. west, longitude 90 deg. 40 min. north, 500 feet above the sea level—is situated on the banks of the Illinois river, in the county of Cass, midway between the head of navigation and the mouth of the river. It occupies the site of what was once an Indian village occupied by the Muscooteens, a tribe of the Illinois. It is connected directly with Chicago and St. Louis by the Chicago, Burlington & Quincy railroad, and with Springfield, Cincinnati and Louisville by the Springfield Division of the Ohio & Mississippi railroad.

Beardstown was founded in 1824; was incorporated as a town by act of the legislature in 1837, and at that time contained about 700 inhabitants. It was incorporated as a city by an act of the legislature in 1849; population in 1860, 2,000; population in 1870, 2,322; population in 1880, 3,400. Present population about 4,000, of which 800 are estimated under 5 years of age. Estimated number of foreigners about 20 per cent. There is one Chinaman. No negroes or mulattoes. No meteorological observations have been taken here.

Topography.—The Illinois river at this point is, at a low stage of water, about 300 feet in width, and at an ordinary high stage of water about 500 feet in width. At extreme high water—occurring and lasting for several weeks early in the spring, and sometimes as late as June—the river overflows its banks for a distance of 2 to 3 miles on the Schuyler county shores and encroaches on and usually fills the low marshy grounds, surrounding the city on all sides. The average depth of the river is 5 feet, with an average velocity of 4 miles an hour. The exposed shore in front of the city is of sand, mud and river shells. It is gradually sloping. The water at most times of the year is clear, but during a low stage of water it becomes foul, through contaminations from the sewers of the several cities which empty into it, from dead fish and river vegetation. There are various shoals or flats in the river in the vicinity of the city that are at times laid bare or only partially covered with water. There are no natural or artificial falls of water within or near the city. The nearest dam above is at Copperas creek, about 60 miles distant, and there is a dam being built at LaGrange, a point 12 miles below. This latter mentioned dam will probably have the effect of inducing an average high stage of water at this point. Quite a perceptible odor is emitted from the stagnant water surrounding the town and from the river itself during the hot summer months, and the effluvium has a marked effect on the health of the community in so far as producing malarial contagions. At time of overflow of river, no marked change as to health is noticeable, and the height of the water in wells is in ratio to the height of water in the river.

Owing to the erosions of the river in washing away the upper rock strata, the city rests on a drift of sand, clay and gravel. This drift is from 90 to 150 feet in thickness and between it we have the Devonian system of rock, namely, limestones, shaly slates and water bearing salines. Below this in seeming regularity the Silurian system of rocks, followed below by the archean formations. No diseases, with the exception of malaria, are believed to be due to a disturbance of the surface soil in the low lands. The gravel streaks below soil are continuous; the limestones are fissured and there are no data of any epidemic following the direction of the underground flow of waters.

Water Supply.—The chief source of water supply is from driven wells and to which are attached pumps. The wells are driven from 15 to 30 feet, through the gravel beds, when a plentiful supply of clear and wholesome water is obtained. The surface drainage of the city does not pollute the water of this variety of wells. The city has no reservoirs or water conduits, no filtering is necessary, and no chemical analysis of the water has been made. The city is not supplied with public fountains or fire plugs. Rain water stored in cisterns is generally used. The city has no public bath houses nor drinking fountains.

While this survey was being compiled, a boring was made for the purpose of prospecting for water, natural gas and oil. This has since been completed to a depth of 1100 feet, with the following result:

	Feet.	Feet.
Drift sand, clay and gravel	88	....
Carniferous limestone (Devonian)	125	213
Gray slate, soapstone and shale	250	463
Sandstone (Niagara), oil, gas, "water"	60	523
Limestone (Silurian)	50	573
Red slate, soapstone and shale	125	698
Limestone, "water"	222	920
Sandstone	38	968
Limestone	92	1060
St. Peters sandstone, "water"	40	1100

Oil and gas escaped with water at 523 feet. The water from the St. Peter's sandstone is slightly saline but not unpleasant to the taste. Pressure was tested to 100 feet but will probably rise 50 feet higher. Volume, 800 gallons per hour. Water at 920 feet (sulphuretted) rose 200 feet in the tubing. Water at 1060 feet not tested, but believed to be artesian. The following is the result of the analysis of the water at 1100 feet, made by William McMurtrie, analytical chemist, Champaign, Illinois:

Nitrogen of free and saline ammonia	2.68
Nitrogen of albuminoid matters	0.07
Nitrogen of nitrates	1.10
Nitrogen of nitrites	....
Chlorine	5800.00
Hardness (represented in calcium carbonate)	25.23

Oxygen required to oxidize organic matters not determined. The above analysis represents parts per million.

Drainage and Sewerage.—The area included in the city limits is about one square mile. Perhaps one-half of this area is closely built up, representing a compact character. The city being built on sand and gravel, has good natural surface drainage. There are 2 to 5 sewers built underneath the principal streets leading towards the river to carry away the water accumulating in low places. They are constructed of tiling and 12 inches in diameter and empty into the river.

Streets, Alleys and Public Grounds.—The general width of the roadway of the streets is 50 feet. The principal streets in the business portion of the city are paved with clay and black loam; also, those streets leading to the country highways. The streets, owing to the porosity of the soil, are never unduly wet in the spring of the year. A grader is used on the streets when necessary, leaving gutters for the escape of water.

General width of sidewalks 12 feet. They are constructed of stone, brick, wood, but chiefly cinders combined with clay or sand.

General width of alleys 12 feet. They are required to be kept clean, and deposits of refuse, as ashes, manures or garbage, are not allowed. Streets are in charge of the street and alley committee, and the work is done on them by the supervisor. Sprinkling in business portion by private subscription. Water for this purpose is obtained from the river. The results are satisfactory as to the laying of the dust in the street.

The streets are well shaded. Trees are planted along the outside of the sidewalks in straight rows. Maple, elm and locust are the principal varieties of shade trees. Property owners are required to clean their own alleys and streets in front of their lots.

There is one public park, 250x250, well shaded and good walks and under charge of the street committee.

The railroad crossings are dangerous both for pedestrians and vehicles. Two of the crossings have watchmen; the others not. Probably 5 to 6 lives lost from this cause the past five years.

HABITATIONS.—There are about 850 dwelling houses in Beardstown, nine-tenths of which are inhabited by the owners. Average occupancy of each dwelling 5. Very few tenement houses occupied by two or more families, and none are over-tenanted. There are no regulations concerning over-occupancy. Within certain fire limits "in business portion of city" no wooden structures are allowed to be built. But few dwelling houses are connected with sewers; none have privies or water closets in the basements, but some of them have them attached to their houses.

Nearly all dwellings are isolated buildings with yard space all around them. There are many small dwellings built on the ground, not properly raised, nor suitably built for sub-ventilation, though it has not been noticed that the inhabitants are more liable to sickness than others better situated. Cellars are used for storage of potatoes, apples, coal, milk, butter, etc. Ashes and sweepings are not deposited therein. The floors of the cellar are either brick or cement.

No positive cases of ill effects have been observed from arsenic paper in sleeping or living rooms. There have been several cases of skin affection, or disease from aniline colored stockings, worn by adults and children of the city.

LIGHTING.—The city is partially lighted by petroleum lamps. Petroleum is used entirely for lighting by the inhabitants.

GARBAGE AND EXCRETA.—Householders are required to remove their own garbage, and this is complied with pretty generally. Kitchen refuse is not required to be removed in covered vessels. Garbage is taken to the flats above and below the city. Ashes are generally removed in the spring at the expense of the city, and as often thereafter as necessary. The probable cost to the city per annum is $50. Dead animals are required to be buried in the low flats below the city.

No houses but the hotels have sewer connections. A small per cent. have cess pools on premises for the delivery of kitchen and laundry waste water. All houses have privies. Vaults are not water tight or connected with public sewers. Householders are notified every spring to have privy vaults cleansed. The dry earth system is not used, but it would be a convenient method as sand is plentiful.

MARKETS.—There are no markets established by law. There are five private meat markets. Grocery stores sell meats to some extent. There are several fish markets on the bank of the river. It is the duty of the board of health, through its health officer, to make inspection of food when his attention is called to it, or when he has reason to believe that unwholesome food is offered for sale.

The supply of fresh meat, as to quantity and quality, is very good. No meat or fish has been condemned the past year. Meats and vegetables are brought to market from the immediate vicinity in wagons. About one-half of the fowls are brought to the city, and sold to the consumers alive. The supply of vegetables, as to quantity and quality, is good. Nearly all is derived from the immediate vicinity.

No fruits or vegetables have been condemned the past year. There are no municipal laws with regard to hucksters and peddlers, private markets or the hawking of fruits, etc., in the streets of the city. Fruits and vegetables are allowed to be offered for sale without regard to quality, but are generally wholesome. The producer can sell direct to the consumer without being subject to any tax.

The milk supply is of good quality. No cows are fed on distillery swill; all are fed on grass, grain and hay. No cases are known of poisoning or acute disease caused by unwholesome articles of food. No oleomargarine is sold as butter. The State law relative to the adulteration of food, drink, etc., would be enforced by the local health board, should the occasion arise, but there has been no prosecution under it.

SLAUGHTER HOUSES AND ABATTOIRS.—Animals for the city markets are obtained from the immediate vicinity, and are slaughtered only for home consumption. No disease has been observed as rendering their flesh injurious as food and no cases of trichianosis have ever been reported.

MANUFACTORIES AND TRADES.—There are no manufacturing establishments within the city limits or in suburbs which are nuisances.

POLICE AND PRISON.—There are day and night police, two acting at night and one during the day. They do not act as inspectors of nuisances. There is one calaboose. Both sexes are confined in the same institution. There are fifteen saloons where intoxicating liquors are drunk on the premises. They each pay a license of $500 a year.

FIRE ESTABLISHMENTS, ETC.—There is one hook and ladder and one hand engine company organized. They are volunteers and receive no pay. The water supply for fires is obtained from the river, wells and cisterns. There are about thirty persons enrolled in the fire department. The annual expense of fire establishment the past year was about $200. The State law regulating the doors of public buildings is but partly complied with.

CEMETERIES AND BURIALS.—There is one cemetery in the city, but no longer used for burials. The city cemetery is situated 1½ miles from the city. Burial permits are required. No nuisance or evil effect has been observed from the cemeteries. The burial of persons dying from contagious diseases is placed in charge of the local health board.

PUBLIC HEALTH LAWS, REGULATING SANITARY OFFICIALS.—There is a special board of health composed of two members of the city council, a physician acting as health officer and the mayor as chairman. Its powers are defined by ordinance, and it acts in conformity with the State laws governing the sanitary code. The board registers no vital statistics, but causes of mortality are reported to the county clerk. In contagious diseases all patients are isolated as closely as possibly and the public are properly cautioned.

The health board has inspections made of the streets and alleys, sewers and dwellings once a year. The board has the power to remove persons sick with contagious disease to the pest-house if the case requires it. There are no requirements respecting vaccination. Births and deaths are reported to the county clerk. The board records no vital statistics.

MUNICIPAL SANITARY EXPENSES.—Two hundred dollars would cover the amount paid by the city during the past year for sanitary work and material furnished. The coming year it is proposed to put in additional sewers to drain a low tract lying in the eastern portion of the city. As before mentioned, the city is surrounded on all sides excepting the river side, by low, marshy swamps. Were these drained by means of a large open ditch communicating with the river, it would materially add to the sanitary condition of the city.

PUBLIC SCHOOLS.—Total number of scholars registered last year, 575; average monthly attendance, 450; per cent. of attendance, 84. There are three buildings. One of eight rooms, one of three rooms and one of one room. Pupils under 8 years of age are confined to rooms from 9 to 11:30 A. M. and from 1:15 to 3:30 P. M.; at seats without change from 30 to 45 minutes. Experience favors two daily sessions with intermission of 1 hour and 15 minutes and two recesses of 15 minutes each. The pupils in the primary and intermediate rooms stand during recitation; pupils in the other rooms sit except when working at the boards. The summer vacation lasts three months. No school on Saturdays nor on any legal holiday. Exercise in the open air is compulsory on the part of boys except when the weather is too cold or inclement. No prizes are awarded. The system of marking by per cent. has been discarded.

All the pupils are required to furnish certificates of successful vaccination. Pupils afflicted with contagious diseases or coming from homes where such diseases exist or prevail, are not admitted, The eight-room building is heated by a steam heating apparatus The other rooms are heated by coal stoves. The temperature is kept at about 70 deg. Fahrenheit in cold weather. The ventilation is only fair and not as good as it ought to be. Outbuildings, 60 feet or more from the school buildings, are used for privies. Coal is stored in the basement. The janitor resides in the basement. There is no place provided for the children to play in except the open school yard. An arrangement is made for pupils to dry wet clothing, especially in the primary rooms. Folding seats are used with slat backs and seats.

SANITARY SURVEY OF BELLEVILLE.

BY CHARLES H. STARKEL, M. D.

LOCATION, POPULATION AND CLIMATE.—Belleville, the county seat of St. Clair county, is situated in latitude 30 deg. 30 min. north, longitude 90 west, and is 14 miles southeast of St. Louis, Mo. It was founded in the year 1814, incorporated as a town in 1819 and as a city in 1850. In 1860 its population was 6,000; in 1870, 9,000; in 1880, 10,682, and the present estimated population is 19,500. Of this number about 2,650 are under 5 years of age. The native born constitute about 75 per cent. of the population. There are about 4,000 persons of European birth, 450 negroes and mulattoes and 2 Asiatics. No meteorological observations have been recorded in the city, but the climate is mild and generally salubrious. The meteorological data for St. Louis—only 14 miles nothwest of Belleville—are substantially accurate for this city. For 1885 these were as follows:

MONTH—1885	Mean corrected barometer......	TEMPERATURE.			Precipitation—inches	Mean relative humidity......	WIND.	
		Maximum..	Minimum..	Mean......			Prevailing direction..	Total movement....
January	30.200	69.2	—9.7	26.0	3.26	73.8	NW	8,505
February......................	30.057	68.4	—5.5	27.0	0.87	72.5	W	6,338
March.........................	30.128	74	13.1	41.1	0.40	64.2	N	9,878
April..........................	29.999	79	32.1	56.4	4.84	66.9	SE	9,339
May	29.918	91	40.5	64.9	2.80	66.6	SE	7,628
June,.........................	30 010	92	52.1	73.5	7.68	74.5	S	6,995
July..........................	29.962	96.6	60	80.5	2.58	75.3	SW	5,119
August......................	29.953	95	53.5	74.6	2.96	75.7	NE	6,010
September....................	30.007	84	50.1	68.4	8.98	74.6	SE	6,736
October......................	29.984	79	37	55.8	7.51	71.1	SE	8,046
November....................	30.009	76.1	31.8	47.8	1.68	72.1	W	9,000
December	30.127	64.9	6	38.9	2.03	69.4	S	9,955

TOPOGRAPHY.—The country surrounding the city is mostly level, or gently rolling, except on the west, where, at a distance of about 7 miles, the bluffs—which separate the interior of the county from the "bottom lands" along the Mississippi river—rise to a height of about 150 feet. Near these bluffs is a tract of marsh, or "the lake," as it is called, which is about 3 miles long and from an eighth to a quarter of a mile wide. In summer the water on this marsh becomes very low, but is several feet deep in winter. It is being drained by a drainage commission, and some parts are already reclaimed. Malarial fevers are prevalent in this vicinity. The bottom of the lowest valley in the vicinity is about 370 feet above the sea level; the trend of this valley or ravine is to the south. The site of the city is rolling—the highest elevation being 420 feet above sea level, the lowest 370 feet, and the average about 400 feet. It is surrounded by grass lands, forests and farms. The general slope is southward.

Richland creek, a tributary of the Kaskaskia, flows through the southwestern part of the city; it is a sluggish stream—except when refreshed by hard rains—about 25 feet wide and with an average depth of about 4 feet; it is fouled by refuse from breweries, gas works and the surface drainage of the city which discharges into it by open gutters. There are also some ponds in the western and southern parts of the city which become stagnant and offensive in dry weather—from July to September—and these, together with the creek, are subject to overflow, which affects considerable ground and fills the wells in their vicinity during rainy weather. Malarial fevers are generally prevalent in these localities. All the ponds—of which there are 10 within the city limits—are used as reservoirs for different manufactories. Those in the eastern and northern portions of the city—4 in number—do not overflow, and these are the healthiest parts of the city.

The site and vicinity of the city belong to the tertiary formation. There are no surface rocks. The underlying strata in the order of succession from above downward are: 1, alluvial humus, 20 feet; 2, yellow clay, 20 feet; 3, limestone, 30 feet; 4, slate, 1½ feet; 5, coal, 6 feet; 6, white and blue clay, 3 feet; 7, limestone, 80 feet; 8, coal, 3 feet, and followed by sandstone. The slope of the strata is northeast. Character of surface soil yellow clay; malarial effects observed when it is disturbed. There are no continuous fissues in the rock, nor gravel streaks through which soil-water may flow.

WATER SUPPLY.—The water supply is collected from Richland creek, which is supplied by springs and surface water. It is first caught in a large pond or reservoir, which is about a quarter of a mile in length and 600 feet wide. This is a settling pond, and from it the water passes through a large filtering bank, composed of drain tiling and gravel, into a filtering pond of small dimension, from which it is conducted about one-quarter of a mile through one large iron pipe to the distributing pond. Here it is continually agitated by a large fountain, and is pumped into a stand tower (125 feet high), and from there it is passed through two of the Hyatt filters, when it is ready for use.

The average amount of water thus supplied per diem is about 75,000 gallons. During the past year the maximum daily amount supplied was 175,000 gallons, and the minimum 60,000. The average amount of water stored and available in case of fire is, in the settling pond, 32,000,000 gallons; filter pond, 2,000,000 gallons, and distributing pond, 2,500,000 gallons. No chemical analysis of the water has ever been made. It is not offensive in taste or odor at any time. The city has no public fountains, but has 100 fire plugs. It has no artesian wells. The majority of the people use cistern and well water as yet.

The soil through which wells are dug is clay, and the usual depth to the botton is 60 feet, to water 50 feet. In some parts of the city the depth to water is only 20 feet. As a rule wells and cisterns are located so as to be free from cesspool and privy contamination, but in some instances they are near enough to be easily contaminated. The use of well water has not been productive of sickness; it is free from all organic matter but contains some chlorides. No diseases have arisen from the use of lead pipes. There are no public baths or drinking fountains.

DRAINAGE AND SEWERAGE.—The area included within the city limits is about 4 square miles, one square mile being closely built up. The surface drainage is good. Underground drains have been constructed by private parties, draining probably one square mile. There are no swamps—except as already noted—or areas of made land in or near the city. Some cellars in the southern and western portions of city have water in them at times.

There is no system of sewerage in the city, but the city council is considering the advisability of creating a sinking fund for this purpose. There is one outlet sewer discharging into Richland creek, having a diameter at its mouth of nearly 4 feet. It is round in shape, constructed of brick, set in cement, and is kept clean by being flushed from the water-works. Nine-tenths of the city is not sewered and all of this area is built upon. Main street has the only underground sewer and surface drainage passes into it. Its capacity is sufficient in heavy storms. At the corner of every second block the sewer is ventilated by a man-hole.

There are no municipal regulations concerning drains connecting houses with the sewer, nor are traps required in the course of the connecting drain. House drainage is not required to be conveyed to the sewer. Odors are not perceptible from the sewer openings or outlets.

STREETS, ALLEYS AND PUBLIC GROUNDS.—High and Illinois streets are 66 feet wide; average width of all other streets are 49½ feet. The general width of sidewalks is 10 feet; half of them are paved with brick and there is a paved gutter at the edge of all sidewalks. The total length of paved streets is about 15 miles; the material used is broken limestone. Total length of streets unpaved, 25 miles. Streets not paved are unduly wet in the spring of the year. They are cleaned twice a year by city council, but watering is done at individual expense.

Shade trees are planted along the edges of nearly all streets; they are of various kinds, principally elm and maple and are planted about 15 feet apart. Gas does not injure the trees unless the post is very near them. The trees are supposed to have a favorable influence upon health. They are cared for by individuals. No portion of the sidewalk or roadway is laid down in grass.

General width of alleys is 20 feet. Ordinances prohibit the deposit of ashes, manure, garbage, etc., in the alleys. They are kept clean by the city. There are no public parks belonging to the city, but there is one open square 300x300 feet within the city, which is kept in good condition.

Only one street crossing a railroad is provided with a watchman. Many other crossings are considered dangerous and should be thus supplied. An average of two lives has been lost on such crossings for the past five years. No accidents have occurred on the street railroads.

HABITATIONS.—The city contains about 2,500 dwellings, eighty per cent. of which are inhabited by owners. The average occupancy of each is 7 4-5. There are ten tenement houses occupied by two or more families. None is over-tenanted. There are no municipal regulations concerning over-occupancy.

All buildings constructed within the "fire limits" must be of brick and stone. With the exception of houses on the main street, which is sewered, but few have connection with a sewer, and in such cases it is through a private drain. No houses have wells, cisterns or privies in cellars or basements.

About fifty per cent. of the dwelling houses are isolated and have sufficient clear space all around them. Only one or two houses have special arrangements for ventilation, and these consist only in ventilators in the walls. All houses having neither cellars nor basements are properly raised from the ground and suitably arranged for sub-ventilatiou.

Cellars in the southeastern portion of the city are damp and insufficiently drained. Very few habitations are furnished with proper bathing facilities. Cellars are not used for storing fuel nor for the deposit of ashes and garbage. No diseases have occurred seemingly due to over-crowding of dwellings, nor does the fuel used have any perceptible influence upon public health. Where there are basement floors, the ground is usually cemented. Height of buildings in comparison with width of streets is about one-half.

GAS AND LIGHTING.—The streets of the city are now lighted by electricity, an elevated arc lamp being placed at every second corner. One-half of the dwellings use gas. The gas works are located in the southwestern portion of the city, on Richland creek. During some months in the year they are considered a nuisance to the neighborhood. Refuse from the works is either burned or carted away.

Gas is furnished for $2.50 per thousand feet, with 20 per cent. discount if paid in five days. The quality of gas furnished as to illuminating power, odor, etc., is satisfactory. No injurious effects to health have been observed from it.

The city appoints an inspector to ascertain grade, etc., of burning fluids, kerosene, etc. No accidents have occurred in the past five years from explosions of burning fluids or gas. Water gas is not used.

GARBAGE AND EXCRETA.—The local ordinance for the removal of garbage is generally complied with. Kitchen refuse is not required to be removed in covered vessels. Individual property owners must remove garbage, ashes, etc., at their own expense. It is usually taken to places needing filling up. The removal and ultimate disposition is promptly and satisfactorily performed. No nuisance is caused or damage to health sustained from infrequent removals. About one-half of the garbage is destroyed by fire. A city scavenger carries off all dead animals and either renders or burns them; disposal satisfactory.

About 25 per cent. of the houses have cesspools into which kitchen and laundry waste water is drained; most of them are porous and are not furnished with overflows. In nine streets absorption drains for cellars are in use. There are no regulations for the cleaning of cesspools, but the methods in use are satisfactory.

None of the houses have water closets. Ninety per cent. of the houses depend wholly upon privy vaults, which are all water tight. They are required to be thus constructed and cleaned regularly at householders' expense. None of the vaults have connection with the sewer. No cases are recorded of contamination of wells or cisterns by privy or cesspool. The dry earth system is not in use.

MARKETS AND FOOD SUPPLY.—The market is established by law during the months from April 1 to October 31. It is located on the corner of Illinois and High streets. The building is of brick 100 x 50, and has 60 vegetable and 14 meat stalls. They are rented, the former for $5 and the latter for $40, for the season. The market is open week days, and is cleaned by city employés twice each day. The building is public and is a source of revenue to the city. The council appoints a master of the market, who acts as inspector thereof. He receives a salary of $650 per annum. Grocery stores retail fish and vegetables, but are under no supervision. The supply of fresh meat as to quantity, sufficient; as to variety, all one could wish, and as to quality, of the very best. Very little fish or meat was condemned last year. Meats and vegetables are brought to the city in carts and wagons from the immediate neighborhood. Most of the fowls brought to the city are sold to consumers alive. The supply of vegetables as to quantity, abundant; as to quality, very good, and is derived from the immediate vicinity of the city. None of it was condemned during the past year.

Local ordinances require hucksters and peddlers to pay a license of $3 per day. Fruits and vegetables are allowed to be sold without other restriction. Facilities are afforded producers as sheds, stands, etc. Producers, unless they have a stand at the market can not sell direct to consumers.

The supply of milk is furnished from dairies in the vicinity. The cows are pasture-fed. There have been no cases of poisoning or acute disease caused by unwholesome articles of food, canned or tinned meats, vegetables, fruits, etc.

There has been no occasion as yet to enforce the State law concerning adulteration of food and drink. Since the passage of the oleomargarine law some farmers have been accused of adulterating butter, which indicates about the extent of the sale of bogus butter in the city.

SLAUGHTER-HOUSES AND ABATTOIRS.—Animals for the city markets are obtained from the surrounding farms and farm stockyards. They are driven and hauled to places of slaughter; they are not submitted for inspection either before or after slaughter. The usual mode of slaughtering is shooting. Animals that die in transit are taken in charge by the city scavenger. No statistics at hand of animals condemned.

Slaughter houses are built at private expense. There are ordinances forbidding the building of slaughter houses or rendering tanks within the city limits, but they are not strictly enforced. The business is scattered, each butcher owning his own establishment. Some few are beyond the city limits, but most are in it. But one of them drains into the sewer; the refuse in the rest is carted away. They are considered nuisances in their neighborhood on account of their stench.

The fat is made into lard; tallow used for soap, and the animal refuse is fed to hogs, or used as a fertilizer—in many instances fed to hogs kept for the purpose. The rendering is usually done on the day animals are slaughtered. Meat is cooled in ice boxes. No canning or shipping of meat is carried on, but sometimes dressed meats are received from East St. Louis.

MANUFACTORIES AND TRADES.—Aside from the slaughter houses, there are no manufactories in the city considered nuisances. Restrictions are imposed upon such by local ordinance, but not rigidly enforced. The rendering places are considered very disagreeable. No factories of any kind pollute the water supply, and there is none which produce disease in the workmen.

Women are not employed in any of them. The hours of labor are 7 to 12 M., 1 to 5:30 P. M. With the exception of the nail mill, children are not employed in factories; the youngest so employed are 14 years old. Their employment does not seem to affect their health. The cubic space and ventilation of work-shops are generally satisfactory. No diseases have been observed among the work people due to insufficient air supply. Arrangements for privies and water-closets in these establishments are satisfactory.

HOSPITALS AND PUBLIC CHARITIES.—There are two hospitals in or near the city. The St. Elizabeth, controlled by the Sisters of Charity, has 60 beds and is located in the southwestern portion of the city, on high ground, It is a two-story brick building; the first floor contains drug store, waiting room, consulting room and a few beds; second story, beds and chapel; the basement contains the kitchen and dining room.

The county hospital, under the control of the board of supervisors, is located one mile north of the city and contains 125 beds, divided into five wards. It is a long two-story brick building. The surgical and insane wards are on the south half of first floor, the north half containing the female ward, kitchen and laundry;

second floor contains office, drug store, general and convalescing wards. There is also a pest house situated about 300 yards from the main building, which is now used for the old people.

The water supply is from a well. There is ample room as to land to raise all the vegetables used, and this is worked by paupers in the hospital. The institution is under the immediate supervision of the superintendent and steward. The hospital accommodations are sufficient for the wants of the city.

There are no free dispensaries. The system of public charities costs the city nothing. It is thought advisable that a city hospital should be established. The city employs no physicians for the poor, but the county employs two, one at a salary of $365 and an assistant at $250. The latter looks after the city poor. The county hospital has an ambulance connected with it.

Police and Prisons.—The police force is appointed by the mayor and confirmed by the council. It consists of nine patrolmen, one captain, and one city marshal who is ex-officio chief of police, and one sergeant. The patrolmen are all on night duty. To some extent they act as inspectors of nuisances.

There is one police station in which both sexes are confined. Its average daily occupancy is about 6. The air space per head for such occupancy is 600 cubic feet; for maximum occupancy, 300 cubic feet. The dimensions of cells for single prisoners, 6x8 feet. Vagrants are kept in an adjoining room separate from others. Ventilation is effected by ventilators and windows. Portable tin vessels are used as water closets. There are no facilities for bathing inmates. The assistant county physician looks after the sick among the prisoners, and in cases of severe illness they are removed to the county hospital.

The county jail, a large two-story brick building, is located in the city opposite the court house. Its average daily occupancy is 25. The dimensions of cells for females are 8x6½ feet and the cells for males 7x6½ feet; all are provided with hanging cots. They are heated by steam and ventilated by air pipes from cells and ventilators. No epidemics have ever occurred among the prisoners. A bountiful supply of good wholesome food is allowed all prisoners. They are not required to do any work.

There are no known houses of prostitution in the city, but according to the police docket there are lots of stray prostitutes. The license system with them has not been tried. There are 80 places in the city at which intoxicating drinks are sold, six of them being beer gardens. The estimated amount of malt liquor consumed annually is 20,000 barrels or 800,000 gallons; of distilled spirits, 600 barrels or 27,000 gallons. About 300 cases of drunkenness are brought before the police courts annually. Cirrhosis of liver seems to be prevalent among saloon-keepers and hard drinkers. The license fee for selling liquors is that fixed by the State law: For spirituous and malt liquors, $500; for the latter only, $150.

Fire Establishments.—The fire company is a paid establishment and is organized by the council. It consists of a chief who appoints the different officers of the different companies except the drivers of reels, who are appointed by the Mayor. There is no fire alarm or police telegraph other than the use that is made of the telephone system, which is not satisfactory. There is no insurance patrol for discovering fires and saving property.

There are three steam fire engines, one hook and ladder truck, and three hose reels. Water supply for fires is obtained from the water works, is abundant and well distributed. Some few houses, hotels and factories have fire extinguishers, the "hand grenade" being most in favor.

The annual expense of the department is $10,000; number of persons employed, 18. The men reside at their houses, except drivers, who live opposite the engine houses. There is no ambulance or medical man connected with the department. The general health of the members of the department is very good, and their character for efficiency and sobriety of the very best.

No loss of life by fire occurred last year, but property to the amount of $15,000 was destroyed. One fire occurred from the explosion of a kerosene lamp, five from carelessness, and two from spontaneous combustion.

All storage of gunpowder, nitro-glycerine, dynamite, etc., must be outside of city limits. An inspector of oils is appointed by the mayor. The State law requiring doors of public buildings to open outwards is enforced.

Cemeteries and Burial.—There are no cemeteries within the city limits, but two near by, "Walnut Hill" and "Green Mountain" cemeteries. The number of graves in the latter is 421, in the former, estimated at 5,000; being 30 years old it is impossible to give exact number. It is not probable that sub-soil drainage from graves contaminates springs, wells or water courses. Average depth of graves is 6 feet; nature of soil clay, and dry at the depth at which the body is placed. No vaults are in use. No nuisance or evil effect has been observed from the cemeteries.

Public Health Laws, Regulations and Sanitary Officials—There is no special Board of Health; the aldermen in each ward act as health officers. The bounds of their authority are confined to the city limits. The aldermen receive no pay for such service. There are no physicians among them, and they have no executive health officer. The police act also as inspectors. All of them have police powers. Inspections are seldom made unless complaint is filed. No meetings of the aldermen are held as a health body. Their powers are not specifically defined or limited by law and they have no authority independent of the city council. They can only define a nuisance, but have no authority to abate. No notice is taken of defective house drainage unless complaint is made, and so of all unsanitary conditions.

In cases of contagious diseases, especially small-pox, patients are isolated, more, however, through the influence of the attending physician than that of the ex-officio health board. It has power to remove persons sick with contagious diseases to special hospital. Vaccination is not compulsory. Births, marriages and deaths become matters of record only through reports to county clerk's office.

REGISTRATION AND STATISTICS OF DEATH AND OF DISEASE.—Burials occur without any permit, but are usually made matters of record by either the sexton or physician. No local system of registration is in force, and the State law is not fully complied with. Cases of contagious diseases are not reported to local ex-officio board of health, the physician in charge taking such precautions as seem to him necessary.

Cholera was epidemic in the city during the years 1849, 1850, 1851 and 1852; mortality great; no data recorded. Yellow fever never epidemic, but one case died here in 1883, transported from the south. Small-pox was epidemic in 1866 and 1872. A few cases of scarlatina occur annually. Diphtheria was epidemic in 1878–79. Small-pox and typhoid fever are less prevalent than formerly.

Immigrants from abroad do not suffer from the climate. Eastern people, as a rule, suffer from chills and fever. Following is a tabular statement, by years and months, of the mortality from specified diseases, during the past eight years:

Deaths from—	Year.	Jan....	Feb....	March...	April...	May....	June...	July....	Aug....	Sept....	Oct....	Nov....	Dec....
Malarial fever	1877	....	....	....	....	....	....	....	....	....	....	....	1
	1878	....	....	2	1	....	....	....	....	....	....	....	1
	1879	....	....	....	....	....	....	3	2	2	....	....	....
	1880	....	....	2	....	1	....	1	....	....	2	....	....
	1881	....	....	....	1	....	1	....	1	....	....	....	....
	1882	....	....	1	....	....	....	1	....	1	1	....	....
	1883	....	....	....	....	....	1	....	....	....	....	....	....
	1884	1	....	....	....	....	....	....	....	1	....	....	....
	1885	....	....	....	....	....	....	1	1	1	1	....	....
Typhoid fever	1878	....	2	....	....	....	....	....	2	1	....	....	....
	1879	....	....	2	....	1	....	....	1	....	....	....	....
	1880	1	....	....	....	....	....	1	....	....	....	....	1
	1881	....	....	....	1	....	1	1	1	....	2	2	1
	1882	....	....	....	1	....	....	....	....	....	....	....	....
	1883	....	....	....	1	....	....	1	1	1	2	1	1
	1884	1	....	....	....	....	....	1	1	2	1	1	....
	1885	....	....	....	1	....	1	....	....	....	....	....	....
Cerebro spinal fever	1879	....	....	....	....	1	1	....	....	....	....	....	....
	1881	....	....	....	....	....	....	....	1	....	....	1	....
	1882	....	....	....	....	....	1	....	....	....	....	....	....
	1883	....	....	....	1	1	1	....	1	....	....	....	....
	1884	1	....	....	....	....	....	....	....	....	....	....	....
Erysipelas	1879	1	1	....	1	....	....	....	....	....	....	....	1
	1880	....	....	....	1	....	....	....	....	....	....	....	....
	1883	....	....	....	1	....	....	....	....	....	....	....	....

Mortality—Continued.

Deaths from—	Year.	Jan	Feb....	March ...	April ..	May....	June...	July	Aug....	Sept	Oct	Nov	Dec....
Dysentery....	1878	....	1	....	....	....	....	....	2	....	....	....	....
	1879	....	....	....	1	....	....	....	....	....	....	....	1
	1880	....	....	....	....	....	....	....	1	....	....	....	....
	1881	....	....	....	....	....	....	....	....	....	....	1	....
	1884	....	....	....	....	....	....	....	....	....	....	1	....
	1885	....	....	....	....	....	....	1	1	....	....	....	....
Diarrhœa....	1878	....	....	....	....	....	....	....	1	1	....	....	....
	1880	....	....	....	....	1	....	....	....	1	....	....	....
	1881	....	....	....	....	....	....	....	....	....	....	3	....
	1882	....	....	....	....	....	1	....	....	....	....	....	....
	1883	....	....	....	....	....	....	....	....	1	....	1	....
	1885	....	....	....	....	....	1	....	....	....	....	....	1
Scarlatina....	1878	1	....	....	1	....	1	....	....	....	....	....	....
	1881	1	....	....	1	....	....	....	....	....	....	....	....
	1883	....	....	....	....	....	....	....	....	....	....	1	....
	1884	....	....	....	....	....	....	....	....	....	....	....	1
Diphtheria....	1877	....	....	....	....	....	....	....	....	....	....	....	1
	1878	1	....	....	1	1	...	1	3	9	9	9	1
	1879	1	2	1	2	....	....	2	1	...	1	....	....
	1880	2	....	....	2	....	....	1	....	3	1	....	....
	1881	1	5	1	....	....	....	....	....	....	....	1	....
	1883	.. .	....	2	....	1	....	....	....	....	1	2	2
	1884	....	....	....	1	....	....	1	....	....	....	....	....
Croup....	1878	....	....	....	....	....	....	1	....	1	....	....	1
	1879	....	....	....	1	....	....	....	....	....	....	....	....
	1880	....	....	....	....	....	....	....	....	....	....	....	1
	1881	....	1	....	....	....	....	....	....	....	....	....	....
	1882	....	....	1	....	....	....	....	....	....	....	....	....
Measles....	1881	....	....	1	....	....	....	....	....	....	....	....	....
	1883	....	....	....	1	....	....	....	....	....	....	....	....
Whooping-cough....	1878	....	....	....	....	....	....	....	1	....	....	....	....
Pneumonia....	1877	....	....	....	....	....	....	....	....	....	....	....	3
	1878	....	1	....	2	....	....	1	1	....	1	....	1
	1879	2	....	4	2	....	1	....	2	1	....	....	1
	1880	....	1	1	....	2	1	....	....	....	....	....	2
	1881	2	2	....	....	....	....	....	1	....	1	....	....
	1882	2	....	....	1	1	....	....	....	....	....	....	1
	1883	5	1	....	....	1	....	....	....	....	....	....	....
	1884	2	....	....	....	....	....	1	....	....	....	....	1
	1885	1	....	....	....	....	....	1	....	....	....	....	....
Pleurisy....	1880	....	1	....	....	....	....	....	....	....	....	....	....
	1881	....	....	....	....	....	1	....	....	....	....	....	....
Phthisis....	1878	....	3	4	1	1	1	5	1	....	1	2	1
	1879	1	2	4	2	1	....	....	....	1	....	1	2
	1880	2	1	2	....	....	1	....	1	....	2	....	....
	1881	....	....	....	1	....	....	1	3	....	2	1	....
	1882	4	2	1	2	2	1	....	1	....	2	....	2
	1883	1	1	1	3	....	1	3	4	3	....	2	....
	1884	2	....	1	....	....	....	1	....	....	2	1	1
	1885	2	....	....	3	....	....	....	....	....	....	1	....

Mortality—Continued.

Deaths from—	Year.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
All other diseases of the lungs	1878	....	....	1	....	....	....	....	....	....	....	....	....
	1879	1	....	1	1	...	....	....	....	....	1	....	....
	1880	....	1	....	....	1	....	....	....	....	....	....	....
	1882	....	....	1	1	1	....	1	....	....	....	1	....
	1883	1	....	1	....	....	....	....	....	....	1	1	....
	1885	....	....	....	....	....	....	....	....	1	....	....	....
Diseases of the heart	1878	1	1	....	....	....	1	....	....	....	....	1	....
	1879	....	....	....	....	...	3	1	....	1	....	....	....
	1880	....	....	....	1	2	....	....	....	....	....	....	....
	1881	....	....	1	....	1	....	....	....	1	1	....	....
	1882	....	....	....	....	1	....	1	....	....	....	....	....
	1883	....	....	....	1	....	....	....	1	1	....	1	1
	1884	....	1	....	....	....	....	....	....	....	....	1	....
Diseases of the urinary organs	1878	1	....	....	1	....	....	....	1	....	....	....	....
	1879	....	....	1	....	....	....	....	....	....	1	....	....
Apoplexy	1878	1	....	1	....	....	....	....	....	1	....	....	....
	1879	....	....	....	1	2	....	1	....	....	....	1	1
	1880	....	1	....	....	....	....	....	....	....	....	....	....
	1881	1	1	1	2	1	....	....	1	....	....	1	....
	1882	....	....	1	....	....	....	....	....	....	....	....	....
	1883	....	1	1	....	....	....	....	....	2	1	....	1
	1884	....	....	....	1	....	....	....	1	....	....	....	1
	1885	....	....	....	....	....	1	....	....	....	....	....	....
Tetanus	1878	....	....	....	....	1	....	....	1	....	....	2	....
	1879	....	....	....	....	....	....	1	....	....	1	....	....
	1880	....	....	1	....	....	....	....	....	....	....	....	....
	1881	....	....	....	....	....	....	....	....	....	....	....	1
	1882	....	1	....	....	....	....	....	....	1	....	....	....
	1883	....	....	....	....	....	1	....	....	....	....	....	....
	1884	....	....	....	....	....	....	1	....	....	....	....	....
	1885	....	....	....	....	....	....	....	....	....	1	....	....
Puerperal diseases	1878	....	....	....	....	1	....	....	1	1	1	....	1
	1879	....	....	....	....	....	....	....	....	1	....	....	....
	1880	....	1	....	....	....	....	....	....	....	....	1	....
	1881	....	....	....	....	....	....	....	....	....	....	....	1
	1882	....	....	....	....	....	1	....	1	....	....	1	....
	1883	....	....	....	....	1	....	....	....	....	....	....	....
	1884	....	....	1	....	....	....	....	....	....	....	....	....
	1885	....	....	....	....	....	1	....	....	....	....	....	....
For the same period, by months, the number of deaths of children under one year of age	1877	....	....	....	....	....	....	....	....	...	....	....	2
	1878	1	4	3	1	2	4	6	7	5	2	3	3
	1879	4	1	3	6	10	5	3	8	9	6	5	1
	1880	3	4	2	1	9	8	1	9	6	4	1	3
	1881	5	2	1	8	6	7	4	6	3	6	3	1
	1882	3	1	....	9	3	9	2	8	2	5	3	3
	1883	2	3	....	2	6	10	6	5	1	3	2	2
	1884	3	1	....	4	3	2	3	3	2	1	1	2
From one to five	1877	....	....	....	....	....	....	....	....	....	....	....	1
	1878	1	2	2	3	2	1	3	7	11	4	3	3
	1879	1	2	6	2	4	2	1	1	1	2	4	....
	1880	....	....	3	....	2	1	2	3	....	....	1	5
	1881	3	3	2	....	1	1	2	4	....	....	4	1
	1882	1	1	....	....	1	....	....	....	....	....	1	....
	1883	....	....	1	3	1	....	3	2	1	3	....	1
	1884	....	1	..	....	....	....	1	1	2	....	....	....

Mortality—Continued.

Deaths from—	Year.	Jan....	Feb....	March...	April...	May....	June....	July....	Aug....	Sept....	Oct....	Nov....	Dec....
From five to fifteen....................	1878	3	2	....	1	....	....	3	2	10	5	....	1
	1879	1	....	2	....	....	....	....	....	1	....	....	3
	1880	....	1	1	....	2	2	.. .	1	....	....	.	1
	1881	....	1	1	....	....	1	....	2	2	2	....	....
	1882	....	....	....	....	....	2	....	....	....	....	....	....
	1883	1	1	1	1	....	....	....	1	1	....	2	1
	1884	3	..	....	1	....	....	...	....	1	....	....	....

MUNICIPAL SANITARY EXPENSES.—The appropriation for the year ending May 1, 1887, for paving and cleaning streets was $18,000. Ashes and garbage are carted away by teams belonging to the fire department. There is annually appropriated $250 for cleaning and repairing market and $500 for repairs on other public buildings. Total municipal expenses during the past year $65,000.

PUBLIC SCHOOLS—The total number of scholars registered in the public schools is about 2,500, and the average attendance 2,100. There are 43 schools, 9 in the first grade; 8 in the second; 6 in the third; 6 in the fourth; 5 in the fifth; 4 in the sixth; 2 in the seventh, and 3 in the eighth. Programme for each school day is, 8:30 to 10 A. M. recitations; 10 to 10:15 recess; 10:15 to 12 recitations; 12 to 1:30 intermission; 1:30 P. M. to 3 recitations; 3 to 3:15 recess; 3:15 to 4:30 recitations.

Pupils under eight are confined to rooms 4 hours daily. Two daily sessions are favored. Classes in lower departments stand during recitations. Scholars are required to devote about one hour each evening at home to the study of reading and arithmetic. Summer vacation usually lasts 9 weeks. Christmas vacation one week. Exercise in the open air is not compulsory. Competition is not a feature of instruction; no prizes are awarded. The sexes study and recite together. The methods of correction are "such as a judicious father would use."

Children must show certificates of vaccination before being admitted. This rule has been in force 28 years. No cases of smallpox have occurred among either teachers or scholars in 11 years. Scholars from families in which contagious or infectious diseases are prevailing are not allowed to attend school. Ninety-five per cent. of absences of pupils is due to sickness. The opinion is expressed that school buildings should not be more than two stories high, nor contain more than eight rooms. Basements should be fitted for play grounds. There are no debilitated pupils in the schools. Competition is considered safe between the sexes, and identical school hours, sessions and lessons advisable.

The Humbolt School is situated on Second North and Silver streets. The site is large and naturally well drained, clay soil. The building was erected in 1882 at a cost of $11,049. It contains eight rooms with a capacity of 54 pupils each. It is heated by steam, and in cold weather the temperature of the room is kept at 70° F. Only four rooms of this building are as yet in use. They are ventilated in summer and winter by a good system of ventilation, which is very satisfactory. Water closets are located 100 feet from the building and are kept in good condition. The basement is not in use; it is ventilated by windows. The water supply at this school is insufficient. School rooms are well lighted. No provision is made for pupils to exercise sheltered from the cold, heat or wet. Clothes when wet on coming to school can be dried at the janitor's dwelling near by. Grounds are cared for by the janitor. The desks are all of modern patterns and are satisfactory.

The Franklin School is situated at the corner of Franklin and Richland streets. Its site is high, soil clay, good natural drainage. The building, which is of brick, was erected in 1864 at a cost of $56,451. It is three stories high, has 18 rooms; capacity of each, 54. It is heated with stoves. Temperature of rooms in cold weather kept at about 70° F. The rooms are ventilated by flues and registers; satisfactory in all but six rooms. The water-closets are 150 feet from the building and are kept in good condition. The basement is used for the janitor's dwelling and for storing fuel; it is ventilated separately from the rest of the building. Water supply from a good well, is abundant and pure. All but six middle rooms are well lighted. There are no opportunities for pupils to exercise sheltered from the cold, heat or wet, and none for drying clothes when wet on coming to school. The playgrounds are 350x400 feet, with plenty of shade trees. Desks are of modern patterns and satisfactory.

The Bunsen school is on the corner of Walnut and Vine streets. It is situated high, with good natural drainage, clay soil. The building, of brick, was erected in 1878–79 at a cost of $13,896. It has eight rooms, seating capacity of 54 each; heated by steam, and the temperature in cold weather is kept at 70° F. The rooms are ventilated by a very efficient system of ventilation. Water closets are built about ten feet from building. The basement, which is not in use, is ventilated by windows. Water supply is from a well and abundant and apparently of good quality. All the rooms are well lighted. No opportunity is provided for pupils to exercise sheltered from the cold, heat or wet. Clothes when wet coming to school can be dried in the halls or cloak room. The play grounds are large and shady. Desks are of modern patterns and satisfactory.

Washington school is located at the corner of Abend and Fourth streets. Area of site 300x286 feet; it is high with good natural drainage. The building is of brick, two-stories high; was built in 1864, contains ten rooms and cost $40,910. Capacity of the rooms is 50 pupils each. The building is heated by steam and the temperature in winter is kept at 70° F. The rooms are ventilated by flues and registers and in summer by the windows. The privies are about 100 feet from the building and are kept in good condition. The basement of the building is not used; it is ventilated separately from rest of building. The water supply is from a well; quantity sufficient, quality doubtful. All but two middle rooms are sufficiently lighted. No opportunities for pupils to exercise sheltered from the cold, heat or wet. Clothes when wet on coming to school can be dried in hallways. Playgrounds are ample and shady. Desks are of modern kinds, double-seated and satisfactory.

SANITARY SURVEY OF CARLINVILLE.

By HENRY TAPPAN and C. J. C. FISCHER, M. D.

LOCATION, POPULATION AND CLIMATE.—Carlinville, the county seat of Macoupin county, is situated in latitude 39 deg. 27 min. north and longitude 89 deg. 55 min. west. It is on the lines of the Chicago and Alton and Jacksonville and Southeastern railways, about 44 miles southwest of Springfield and 53 miles northeast of St. Louis. It was founded in 1831 and incorporated as a city in 1865. The population in 1860 was about 2,000; in 1870, about 2,800, and in 1880, 3,118. The present estimated population is about 3,500; of this number 500 are of European birth and 150 negroes and mulattoes. No meteorological observations have been recorded.

TOPOGRAPHY.—The country surrounding the city is level on the northwest, north and northeast, but deep ravines on the east, south and west. There are no hills in the vicinity, but the prairies are from 50 to 70 feet higher than the bottom lands about two miles east of city. These bottom lands are only covered during high water when the Macoupin creek overflows its banks. The bottom of the lowest valley near by is from 575 to 600 feet above sea level; it trends southwest.

The drainage of the city towards the south is very good, making it noted for its healthful location. It is surrounded by farms, grass lands and gardens, and on the slopes south of town by vineyards. About four-fifths of the site of the city is level; one-fifth in southern portion broken. The original conformation has not been changed. Original water courses have for a distance of perhaps 30 rods been covered over.

The average elevation of the city above sea level is 650 feet. The general surface slope of the city is south. No part of the city is made land. Macoupin creek, about two miles east of the city, sweeps in a curve south and west, keeping about the same distance. One mile west is Hurricane creek. The former is from 50 to 60 feet wide; the latter about 20 feet. The depth of water in each varies from six inches to six feet. The streams are sluggish except when the banks are half full; then very swift; but, as a rule, like a series of ponds, and the motion hardly perceptible. Their sides are steep, and the Macoupin, in places, when the water changes, overflows its banks 40 to 80 rods. The exposed shore is composed of clay and some mud. The water is not foul, the rains swell the streams so that they are thoroughly washed. Their beds are composed of silt generally, but at the rifts and fords are pebbles and sand. There are some shoals or flats in the streams, which at times are laid bare or only slightly covered with water. There are no natural or artificial falls of water in or near the city.

There is a natural drainage through the middle of the town, which has been walled over for a distance of about 40 rods. The water passing through it is turbid and muddy, being almost entirely surface water. Some little sewage passes through it This drain or sewer terminates within the city limits and along the open ditch the water stands in places, forming deposits of organic matter, and gives off a bad odor, but it is not considered a nuisance, for the reason that there are open lots along its course. After heavy rains water stands in the northwest part of the city for a time but soon disappears. Steps have been taken looking towards better drainage in this district. Wells in this vicinity at this time receive surface water, probably doubling the usual quantity in them.

The site of the city and vicinity belongs to the carboniferous period. Limestone crops out in the ravines, but there are no rocks on the surface. The underlying strata from above downward, in order of succession, are:

Coal mine	Drift clays	75 feet.
	Clay shales	28 "
	Dark and light fire clays	5 "
	Sandstone and shale	70 "
	Dark shale	15 "
	Soft, smutty coal	5 "
	Fire clay and sandstone	14 "
	Limestone and clay shale	5 "
	Shale coal	7 "
	Limestone and shale	22 "
	Black shale	4 "
	Coal No. 5	6 "
	Total	256 feet.

The drift clay at the surface holds water well; the shales are the most permeable. Their dip is towards the north. The surface soil is a buff clay, generally overlaid with a dark vegetable mold. Of late years no malarial effects have been noticed when the surface soil was disturbed. There are no continuous fissures in the rock and but very little gravel through which soil water may flow. No diseases are believed to be due to the soil or geological formation, nor has the spread of any epidemic followed the direction of the flow of underground water.

WATER SUPPLY.—The water supply of Carlinville is derived from wells and cisterns. There are no artesian wells. The character of the soil where wells are dug is clay loam. Usual depth of wells to bottom 16 to 18 feet; to water 8 to 10 feet. As a rule wells and cisterns are located so as to be free from privy contamination, but in a few cases wells are near enough for water to soak through the soil.

No epidemics have occurred through use of well water but it has been known to be the cause of some sickness. Generally the water shows but a trace of organic matter and chlorides in very small quantities. No diseases have arisen from use of lead pipes. There are no public baths or drinking fountains.

DRAINAGE AND SEWERAGE.—The area included within the city limits is about four square miles, one-third of which is closely built up. The character and sufficiency of the surface drainage is very fair except in the northwestern portion of the city. No underground drains have been constructed. Some cellars in the city are liable to intrusion of soil water.

There is no regular system of sewerage. Mostly surface open ditches and only one outlet sewer that discharges in a branch within the city limits. Its diameter at mouth is four feet. It is constructed of limestone laid in cement, the walls being 18 inches to 2 feet in thickness. It is kept fairly clean by heavy rains. No artificial means used. Nine-tenths of the city is not sewered.

STREETS, ALLEYS AND PUBLIC GROUNDS.—The general width of roadways is from 45 to 60 feet; of sidewalks 5 feet. The latter are usually constructed of pine; some of brick and stone. Streets do not differ in healthfulness or comfort, owing to direction. None of them are paved; character of soil black loam and clay. Streets are unduly wet in the spring of the year. They are drained by side ditches; one main street is tiled. There are from 16 to 18 miles of wooden sidewalks.

The cleaning and watering of the streets is in the hands of the Street Inspector. They are kept fairly clean. Shade trees are planted along the outer edge of sidewalks, mostly maple. No direct effect upon health has been noticed from them. They are cared for both by individuals and by the corporation. No portion of sidewalks or roadways are laid down in grass.

There are but few alleys in the city, their general width being 16 feet. There is a local ordinance against the deposit of ashes, garbage, etc., in them. The board of health looks after their cleaning. There are two public parks belonging to the city, one, one acre, the other three-fifths of an acre in size. Both are within the city limits and are kept in good condition. There are no public fountains or urinals placed in them nor areas for and sources of amusement provided within them. All railroad crossings in the city are open. No provision made for watchmen or other means of protection. No lives have been lost from this cause during the past five years. There are no street railroads.

HABITATIONS.—There are between 650 and 700 dwellings in the city limits, about three-fourths being inhabited by the owners. The average occupancy of each dwelling is about 5. There are 25 tenement houses occupied by two or more families; none however is over-tenanted. There are no municipal regulations concerning over-occupancy. No frame buildings are allowed to be constructed within one block of public square. No houses were condemned last year as unsafe, and none as unfit for habitation for sanitary reasons. One hotel and a few private houses have connections with the sewer, all connected by tight drains.

No dwellings have their water supply in cellars or basement. One hotel and one business house have privies in their cellars. Nine-tenths of the dwellings in the city are isolated with sufficient yard space around them. Outside of public buildings no special arrangements are made for ventilation. Many houses having neither basement or cellar are not sufficiently raised from the ground to allow of sub-ventilation.

Many cellars in the city become damp during wet seasons of the year, but almost without exception are now drained. This was largely accomplished during the past year following the House-to-House Inspection of 1885. Very few habitations have proper bathing facilities, and there are no public baths where furnaces are had for heating purposes; the cellars are used for storing fuel.

No diseases have occurred due to over-crowding or unfitness of dwellings; there have been several cases, however, due to bad cellars which are promptly remedied on notice to the board of health. The fuel used has no perceptible effect on public health. The ground under basement floors as a rule, not cemented. No ill effects have been observed from arsenic paper in sleeping apartments nor from the wearing of dyed apparel.

Gas and Lighting.—The city is lighted by gas. The works are located on the banks of a ravine in the southwestern part of the city. No complaint is made as to its being a nuisance in the neighborhood. The lime process of purification is used, and is satisfactory. The refuse from the works is hauled to farms conveniently near. The gas is furnished at $2.80 per 1,000 cubic feet. The quality of gas as to illuminating power is satisfactory. No injurious effects upon health have been observed from it. No analysis of the gas or tests of its illuminating power have been made. All of the principal streets, and about one-eighth of the dwellings are lighted by gas.

No precautions are taken to ascertain the grade, and no restrictions exist on the sale of burning fluids. No accidents in five years have occurred from explosions of these fluids, nor from gas.

Water gas is not used. One flour mill is lighted by electric light, incandescent burner. No ill effect on health or eye-sight noticed.

Garbage and Excreta.—Local ordinances compel the removal of all garbage, and the board of health see that they are thoroughly complied with. Kitchen refuse is not required to be removed in covered vessels. Garbage, etc., is removed by individuals or corporation at the expense of the former. It is taken to ravines on the outskirts or entirely outside of the city, as often as it accumulates. If removals are not promptly made parties are subject to fines. No nuisance or damage to health has occurred from lack of carrying out the provisions of this ordinance. Very little garbage is destroyed by fire. Dead animals are removed outside of the city limits and buried. The manner of disposals is satisfactory.

Hotels only have water-closets, and they deliver directly to the public sewer. One half of the dwellings depend wholly on privy vaults; the other half deposit on surface and are frequently cleaned. Very few privy vaults are water tight. The board of health orders the cleaning of vaults when necessary. No cases of contamination of wells and cisterns by privy or cesspool drainage have been reported. The dry earth system is used to a limited extent.

MARKETS AND FOOD SUPPLY.—There are no public markets; meats and vegetables are sold from shops and stores. These private markets selling meats, fish, vegetables and fruits are under supervision which is effective to prevent the sale of unwholesome articles. The board of health has charge of this supervision.

The supply of fresh meat as to quantity and quality is good. Meats and vegetables are brought to market from farms and gardens in the immediate vicinity. Three-fourths of the fowls brought to the city are sold to consumers alive. The supply of vegetables and fruits is not large. It is derived from the immediate vicinity. There are no municipal regulations concerning hucksters, peddlers, etc. Fruits and vegetables are allowed to be sold without regard to quality. Producers may sell direct to consumers without tax, and one-half of them so sell.

The milk supply of the city is good. Cattle are not fed on distillery slops. No cases of poisoning or acute disease caused by unwholesome articles of food, canned meats, etc., have ever been reported. No reports have been made under the State law concerning adulteration of food, drink, etc. It is not known that oleomargarine or any analogous substance is sold as butter in the city.

SLAUGHTER HOUSES AND ABATTOIRS.—Animals for the city marets are obtained from farmers throughout the county. No meat is packed in the city for shipment. Animals ususally driven to place of slaughter. They are not inspected before or after slaughter. Slaughter houses are erected at private expense. There are no municipal regulations governing them. Each butcher has his own establishment. They are all beyond the city limits. They drain into an open sewer which does not flow through the city. They are not considered nuisances in their neighborhood. Fat and tallow are rendered; blood flows off into ravines and refuse is burned. Animal offal and refuse are not fed to hogs.

MANUFACTORIES AND TRADES.—There is one factory within the city limits which is considered a nuisance. Restrictions are imposed upon it by local ordinance. It is a pickle factory, and the water of wells in its vicinity have become polluted from it. In some cases water has been condemned. This condition has been largely remedied by a system of drainage. There are no factories producing noxious gases and vapors, and none which produce disease among workmen. No women or children are employed in any factories.

HOSPITALS AND PUBLIC CHARITIES.—The Macoupin county alms house is situated one and one-half miles north of Carlinville. It contains 40 beds. There are no hospitals, infirmaries or asylums in the city.

POLICE and PRISONS.—The mayor, aldermen and police magistrate are ex-officio members of the police force. The regular force numbers three—a city marshal and two night patrols. They act as inspectors of nuisances and report to the board of health.

There are two station houses. Both sexes are confined therein, but in separate rooms. Dimensions of cells are 6x10 feet. No facilities for bathing inmates. City employs a physician to give inmates medical aid.

The county jail is located at Carlinville. Dimensions of single cell, 6x10 feet. The jail is heated by stoves. No epidemics have ever occurred among the prisoners. A good diet is allowed them. As a means to prevent indolence and promote industry, they are made to break rock. There are no houses of prostitution in the city.

There are 10 licensed saloons, but no beer gardens. Estimated amount of malt liquor consumed annually, 40,000 gallons. About 100 cases of drunkenness were brought before the police magistrate last year.

FIRE ESTABLISHMENTS—The fire department is a volunteer one. It is composed of engine men, hose men, hook and ladder and bucket men. Alarms of fire are given from the bell on the engine house. They are no alarm boxes. The present system answers its purpose. There is no insurance patrol for discovering fires and saving property. There is one hand fire engine, one hook and ladder truck and one hose carriage. Water supply for fires is derived from cisterns and wells. There are no fire extinguishers in use in the city. Average number of persons employed in the department about 45. The general character of the firemen for discipline, efficiency and sobriety is good. Most of the fires that occurred last year were from defective construction, the loss of property amounting to $33,000. Two incendiary fires occurred.

No measures are taken to insure the inspection of illuminating oils. Within a certain area, denominated the "fire limits," buildings must be constructed of brick, stone or iron. The State law requiring doors of public buildings to open outward is generally complied with.

CEMETERIES AND BURIAL.—There are three cemeteries within the city limits; none others near the city; the annual interments are about 40, 35 and 20 respectively. It is not thought that the subsoil drainage from these contaminate springs, wells or water courses. The average depth of graves is from 4 to 6 feet. The nature of the soil is surface-loam, subsoil, tough clay. It is dry at the depth at which bodies are placed. No vaults are in use. The decay of bodies is not very rapid. No nuisance or evil effect has been observed from the cemeteries.

The precautions taken with regard to the burial of persons dying of contagious diseases are such as are recommended by the STATE BOARD OF HEALTH. There is no receiving vault at any of the cemeteries. Burial permits are not required.

PUBLIC HEALTH LAWS, REGULATIONS, SANITARY OFFICIALS.—The local board of health is limited to the boundaries of the city in the exercise of its authority. It is composed of the mayor and three aldermen. It is a special body selected by the city council. The members serve without salary. Of the present board two are physicians. The mayor is the executive health officer, and the present incumbent is a physician. The board has no assistants unless temporarily appointed for some special work.

The members all have police powers. They make inspections on complaint and otherwise. The board meets once each month. The powers of the board are defined by local ordinance. When nuisances are discovered the board notifies the city clerk, who in turn serves notice to abate. The board makes full report of its actions to the city council.

In cases of contagious diseases the patients are isolated. The board has power to remove such patients to special hospital. There are no requirements concerning vaccination. Strict measures are enforced to confine contagious diseases to the place of origin.

The board does not register vital statistics. Births, marriages and deaths become matters of record only as they are reported to the county clerk.

REGISTRATION AND STATISTICS OF DEATH AND OF DISEASE.—Burials occur without permission of the authorities. No permit is required. No local system of registration of causes of death is in force. Cases of small-pox, scarlet fever, typhoid, etc., are required to be reported to the local board of health. No record is kept of such cases of disease.

Cholera was epidemic in 1849. Mortality great. No cases of small-pox have occurred in several years. A few cases annually occur of scarlatina, diphtheria, cerebro-spinal fever and typhoid fever. The number of inhabitants under 6 years is 382 and from 6 to 21—1043. Intermittent fever is less prevalent now than formerly while catarrhal diseases are more so. Immigrants from abroad do not suffer especially from the climate nor do those from other parts of the country.

MUNICIPAL SANITARY EXPENSES.—The total amount of money appropriated for sanitary expenses last year was $300; for sewerage, $500. Total municipal expenses during the year, $25,000.

PUBLIC SCHOOLS.—The whole number of scholars registered last year was 540; highest average attendance for any one month 500; average attendance for the year 460. There are ten departments in the schools, from primary to high school grade. The time for recitations varies from 10 to 40 minutes, according to grade. There are morning and afternoon recesses of 15 minutes each with a noon intermission of one and one-half hours. Pupils under eight years old attend one session—morning—and are confined to room 1 hour and 35 minutes; to seats without change about 20 minutes. The classes all sit during recitations except when reciting. Classes in the first primary grade stand.

The scholars in the grammar and high school grades are expected to study from one to three lessons outside of school hours. Scholars over eight years are in the school room about five hours daily. Some grades have half holidays each month, some each week. The school year is eight months. Open air exercise is not compulsory but it is encouraged. Prizes are offered for excellence in some particular direction and all compete for them. The sexes study and recite together. When correction or reproof is demanded moral suasion is first resorted to, and as a final argument a switch.

The condition of admission to the schools with reference to vaccinal protection has not been enforced for two or three years. Scholars from families in which contagious or infectious diseases are known to prevail are not allowed to attend school. Teachers are exhorted to vigilance in this respect. Ten per cent. only of absence of scholars is due to sickness. Several cases of shortsightedness have occurred among the scholars, but are not attributed to any fault of the schools. Within seven years three cases of cerebral malady occurred which proved fatal, and one boy being struck in the eye with a cinder, lost his sight.

The school rooms should be larger and have better ventilation. The opinion is expressed that buildings for school purposes should be no more than two-stories high, and that competition between the sexes is beneficial to both when properly supervised.

The public school building contains ten rooms, with an average capacity of 55 each. The rooms are heated by stoves; temperature kept at 70 deg. Fahrenheit. No sickness has been traceable to variations or extremes of temperature. It takes about $175 worth of fuel annually to heat the building. The school-rooms are ventilated winter and summer by the windows, the registers in the building not serving their purpose. The ventilation is by no means satisfactory. Privy arrangements are satisfactory. Basement of building is used for fuel and play-rooms. It is ventilated separately from the rest of the building, by doors and windows. The water supply is from a good well. The school-rooms are sufficiently light, 112½ square feet of surface furnishing light for each room. Pupils may exercise in basement, sheltered from cold, heat and wet and not exposed to air contaminated by privy or otherwise. There is also opportunity for drying clothes when wet coming to school. The playgrounds are ample, being 190x260 feet, and are well taken care of. Desks and seats in use are satisfactory. The basement contains 4 rooms, 30x30 feet and a hall 8x60 feet. Two of the rooms are used for storing fuel and two for play-rooms. First floor has four rooms, 28x30 feet, each room having five windows, 3x7½ feet. Second floor has two rooms, 30x30 and two 26x30 feet, all having five windows each, 3x7½ feet. Third floor has a large hall, 30x60 feet, not in use, and two rooms, 26x30 feet each. There are convenient hat and cloak rooms on each floor.

SANITARY SURVEY OF CARROLLTON.

BY J. T. CROW, M. D.

LOCATION, POPULATION AND CLIMATE.—Carrollton, the county seat of Greene county, is situated in latitude 39 deg. 18 min. north, longitude 90 deg. 23 min. west. It was founded in 1821 and first incorporated as a village in 1849. Its population in 1860 was 1,600; in 1870, 2,000; in 1880, 2,100, and its present (1886) estimated population is 2,500, of which number about 350 are under 5 years of age. The native born number 2,000 and foreigners 500; about 100 are of European birth, and there are 50 negroes. No meteorological observations have ever been recorded in the city.

TOPOGRAPHY.—The country surrounding the city is level. Eight miles distant to the west and extending along the Illinois river is a range of bluffs—general direction north and south. Between these bluffs and the river, running the whole length of the county, are marshes and low lands, from one to four miles wide, which overflow annually during May or June and are covered with water from one to three weeks. No modifications of meteorological conditions or other influences upon the health of the city have been observed as apparently due to the topographical features of its immediate vicinity.

The entire country for miles in every direction is farm lands under cultivation. The site of the city—which is on a "divide" between two creeks—is quite level, with ravines to the south and northwest. The original conformation of the site has not been changed, nor have original water courses been diverted, covered or modified. The general surface slope of the city is to the south and northwest.

The streams passing near the city are Apple creek (course east to west), five miles north; Macoupin creek (course east to west), five miles south; Link's branch (course northwest to southeast), two miles south. Their average widths are 50, 75 and 6 feet respectively, and their average depths are 3 and 5 feet and 1 foot respectively. The sides of these streams are steep, and in high-water they overflow and cover considerable bottom or low lands. The exposed shore ground is mud. The water is usually clean, only polluted by wash from farms. The low lands in places are covered by deposit of silt. In the course of these streams, and also of the Illinois river, there are many shoals or flats which, at times, are laid bare or only slightly covered with water. There are no natural or artificial falls of water within or near the city, and neither canal or race. The only body of water in the city is a pond in the southern part made by building a dam across a ravine. This pond receives surface drainage and water from drain tile in its vicinity, and retains some water all the year round. During the summer it becomes stagnant and emits a perceptible odor, due largely to the refuse poured into it from a creamery near by.

No part of the city is subject to overflow but the soil is humus—almost a sponge in fact, and is always saturated in wet weather. The effect upon health is bad, as wells and privies mutually interchange contents. When such saturation prevails the water in wells rises to within three feet of the surface. The surface rocks in the vicinity are limestone. Malarial effects are observed to some extent when the soil is disturbed, but not as much as some years ago. There are continuous fissures in the rocks through which the soil water flows.

It is not known that any diseases are due to the soil or geological formation. Typhoid fever prevails when a very wet spring is followed by a dry summer and fall, but do not know that epidemics have followed the direction of flow of underground water. Diphtheria, measles, scarlet fever and all diseases caused by blood poison (specific) are rendered more virulent here by reason of the impure water in the wells.

WATER SUPPLY.—The water supply is derived wholly from wells and cisterns. The well water is frequently offensive in taste and sometimes in odor, due probably to pollution from privy vaults. There are no public fountains, fire plugs or artesian wells. Organic contamination undoubtedly reaches the strata by which the wells are supplied. The soil is porous and stables, cow sheds, privies, slops from kitchens, all contribute to such contamination.

Cistern water is only used for washing; the wells supply all the water used for drinking and cooking. The usual depth of wells to the bottom is from 12 to 20 feet; to water varies in wet and dry seasons, 3 to 6 and 8 to 15 feet, respectively.

The use of the well water is believed to be productive of sickness. There were epidemics of cholera in 1853 and 1866; epidemics of diarrhœa are of frequent occurrence, and there has been one epidemic (not extensive) of "winter cholera." No analysis has been made of any of the water, but for reasons before stated organic matter and chlorides must exist to quite a serious extent in the well water.

DRAINAGE AND SEWERAGE.—The area included within the city limits is 2,560 acres, about one-third being closely built up. Drainage is effected by open ditches on each side of nearly every street. They are sufficient for surface drainage. Underground drains have been constructed to act exclusively as such for about three-fourths of the town. They are placed at a depth of 2½ feet and have a fall of 1 foot in 300 feet. There are no swamps, areas of made land or places saturated with water near or in the town which are undrained. There are very few cellars in the city and these all have drains. It would be an impossibility to have a dry cellar in this soil without drains. There is no system of sewerage in the town.

STREETS, ALLEYS AND PUBLIC GROUNDS.—The general width of the roadways of the streets is 45 feet, and of sidewalks 7½ feet. Sidewalks are of plank except around the public square, where brick and stone are used. Streets do not differ in healthfulness or comfort because of direction. Total length of streets about 12 miles, all unpaved; soil humus, alluvial. They become unduly wet in the spring of the year. Roadways are merely graded, high in centre with surface ditches on sides.

Streets are cleaned once a year; not watered at all. Results are not satisfactory; dust is a great nuisance, as is also the mud in wet weather. Shade trees in great abudance are planted along outer edge of sidewalks; varieties being soft and hard maple, black locust and elm. The trees keep the streets too damp, retard free circulation and (probably) injure health. They are cared for by the corporation and by individuals.

The general width of alleys is 9 feet. Deposits of ashes, manure, garbage, etc., therein are not allowed, and must be removed at the expense of the parties depositing same, after notification. Alleys are kept reasonably clean.

There are no public parks belonging to the city. The county owns the public square in the center of the city, in which is the county court house. It is kept in good condition, and contains one public urinal.

There are no watchmen provided at railroad crossings, and every traveler must look out for himself. No lives have been lost at such crossings during the past five years. There are no street railroads.

HABITATIONS.—There are about 500 dwelling houses in the city limits, three-fourths of which are inhabited by owners. The average occupancy is five. About one-fourth of them are occupied by two or more families. Perhaps two or three are overtenanted. There are no municipal regulations concerning overtenancy.

All buildings within 180 feet of the public square must be built of brick or stone; this regulation is enforced. No houses during the past year were condemned as unsafe or unfit for habitation for sanitary reasons. There are no springs, cisterns or wells in the basements of dwellings, nor privies.

Nine-tenths of the dwelling houses are isolated buildings, with sufficient yards or clear space all around them. There are no houses with special arrangements for ventilation; most of them, however, are provided with window sash that can be lowered from above. Houses having neither basements or cellars are, as a rule, properly raised from the ground and suitably arranged for sub-ventilation; probably one in fifty is defective in this respect.

There are very few cellars in the city, and six or eight of them in the center of the city, being insufficiently drained, are damp. Only one house in the city is furnished with proper bathing facilities. Some cellars are used for storing fuel, but ashes and sweepings are not deposited therein.

Owing to the overcrowded and unfit condition of some dwellings, several cases of typhoid fever have occurred. The influence noted upon health of the fuel used is that soft coal smoke irritates delicate air passages, intensifies asthma, etc.

No ill effects have been noticed from the use of arsenic paper in living and sleeping rooms, nor from any wall paper, but eruptions of the skin have been noticed in numerous cases from the use of wearing apparel dyed with aniline colors.

GARBAGE AND EXCRETA.—Local ordinances prohibit the placing of garbage, etc., in the streets, and alleys, and persons violating this ordinance are subject to a fine and must remove the garbage, etc., at their own expense. This regulation is fairly complied with. Kitchen refuse is required to be removed in covered vessels. Ashes, garbage, etc., are removed by individual property owners at their own expense. It is taken outside of the city limits and dumped usually in some ravine. There are no regular periods of removal, but the removal and ulitimate disposition is quite promptly and satisfactorily performed. When the removal of garbage, etc., in any case is long delayed, so as to cause bad odors to arise therefrom and it becomes a nuisance and probable danger to health, complaint is made to the authorities and its removal ordered. A small proportion of the garbage is destroyed by fire. Dead animals are removed beyond the corporation limits and buried at corporation expense; manner of disposal is satisfactory.

One-tenth of the houses deliver their kitchen and laundry waste water into porous cesspools on the premises. These cesspools are not furnished with overflows. Whenever one is complained of as a nuisance, the authorities order it abated. It is said there are many of them nuisances and that they should all be abolished.

All dwelling houses depend wholly upon privy vaults, and only two or three of them are water tight. There are no regulations as to their construction. When they become offensive the corporation orders a new pit dug and the old one filled with earth. They are never cleaned, Copperas is ordered used, but this is not complied with very often. All wells are more or less contaminated from privy vaults, owing to their nearness and porousness of the soil. One well investigated was found to be only fifteen feet from the vault and very foul. This vault was ordered moved and well improved. The dry earth system is not used at all.

MARKETS AND FOOD SUPPLIES.—There are no regular markets. Butchers and grocers supply meats and food of almost every kind. The former keep open all days in the week; the latter all days except Sunday. There are no regulations as to cleanliness—competition compels them to keep things clean. There is no system of food inspection. All grocers sell vegetables and fruits, and if anything unwholesome were offered for sale the authorities would condemn the same. The dealers' own interest prevents them from offering anything but pure articles. All aldermen, mayor and city marshal have general jurisdiction in such matters.

The supply of fresh meat as to quantity is ample, and as to quality and variety, is good. No meat, fish, fruit or vegetables were condemned during the past year. Fresh meats are brought to the city in wagons, distance about one mile from places of slaughter; fruits and vegetables largely from the surrounding country, but considerable from Alton and St. Louis, thirty and sixty miles distant. Three-fourths of the fowls are brought and sold to the consumers alive. The fruit and vegetable supply is ample and good. Producers can sell direct to consumers without being subject to any tax, and many of them so sell. There are no municipal regulations with regard to hucksters or peddlers.

The milk supply is had from dairies in the vicinity and from cows kept in the city. Cows are all fed on grain, hay, grass, etc.; no swill-fed cows. One year ago there were several cases of poisoning from buttermilk, but the nature and source of the poison was not ascertained.

There have been no complaints under the law concerning adulterations. It is not known that oleomargarine or any analogous substance, or any admixture thereof is being sold as butter in the city.

SLAUGHTER HOUSES AND ABATTOIRS.—Animals for city markets are obtained from the surrounding country from one to five miles distant. Cattle and hogs are usually driven to place of slaughter, and sheep and calves hauled in wagons. They are not inspected either before or after slaughter. No animals have as yet been condemned. The slaughter houses are erected at private expenses, and must be located outside of corporate limits. The business is conducted in small establishments. They do not drain into sewers or ditches flowing through the city. They are not considered as nuisances in their neighborhoods, being remote from habitations. Fat and tallow are rendered at slaughtering houses, while blood and refuse are fed to hogs kept for that purpose. No regulations protect the public from any subsequent nuisance. The meat of hogs thus fed is not considered as good as corn-fed hogs. The rendering of animal refuse is usually done each day, except in extreme cold weather, when several days intervene. Method of cooling in summer, by packing in ice; in winter, hanging in open air. There is no packing or canning of meats carried on. Surplus animals are shipped alive.

MANUFACTORIES AND TRADES.—The only establishment in or near the city which can be considered a nuisance is a creamery. It, however, produces no noxious vapors nor does it pollute the water supply. There are no factories which produce disease in the workmen. No women employed in any factories.

HOSPITALS AND PUBLIC CHARITIES.—The Greene county poor house is situated five miles northeast of the city. It contains forty beds, and is governed by the county supervisors.

There are no free dispensaries in the city, and no hospital accommodations. No physicians are employed by the city for the poor.

POLICE AND PRISONS.—The police force consists of one city marshal and one patrolman, the latter being on duty at night. There is one temporary lockup. Both sexes are confined therein. The average occupancy is about one man in ten days. The air space per head for such occupancy is 2,800 cubic feet. For maximum occupancy 600 cubic feet. There are no individual cells—only one room, Ventilation is effected by holes in windows and loose fitting door. Privy arrangements are outside. No facilities are had for bathing. In case of sickness among inmates the city furnishes a physician.

The county jail of Greene county is within the city limits. Its average occupancy is five persons. The dimensions of single cells therein are 6x9 feet. Cells are heated by stoves in the corridors and ventilated by windows and flues to carry off foul air. No epidemics have ever occurred among the prisoners. The diet allowed prisoners is ample and well cooked. No industries or means to prevent indolence are provided.

There are no regular houses of prostitution in the city, known as such, but there are probably fifteen prostitutes. A license system with them has not been tried. These women are more subject to general disease than others, uterine diseases and lung troubles predominating.

Carrollton is a "no license" place, hence, according to law, there are no places where intoxicating liquors are sold, but there are two or three places where it is said it is sold clandestinely. About fifteen cases of drunkenness were brought before the police magistrate during the year. The regulations with reference to the sale of intoxicating liquors are pretty well enforced.

FIRE ESTABLISHMENTS, ETC.—There is no organized fire department. The telephone exchange is used to give alarms. There are no steam or hand fire engines and only one "Babcock" extinguisher. There is one hook and ladder truck with buckets. Loss of property by fire last year about $12,000. One fire from use of dangerous fluid. None from carelessness or spontaneous combustion, but one of incendiary origin.

Gunpowder, nitro-glycerine, etc., are only allowed to be kept in small quantities and not sold after lamp light. No measures are taken to insure inspection of illuminating oils. There are no laws with regard to buildings in reference to fire. The State law requiring doors of public buildings to open outwards is not complied with.

Cemeteries and Burial.—There is only one cemetery, and that is within the city limits. It contains from 1,000 to 1,500 graves. The cemetery is on lower ground than most of the city, hence sub-soil drainage from the land containing graves does not contaminate wells in town, but below the cemetery it is thought they must be contaminated from this source. The average depth of graves is about five feet. The nature of soil is humus and porous clay. The soil is damp at the depth at which the body is placed. A few vaults are used, constructed of brick laid in cement. No nuisance or evil effect other than indicated has been observed from the cemetery. Extra precautions are taken with regard to persons dying of contagious diseases. Burial permits are not required.

Public Health Laws, Regulations, Sanitary Officials—The board of health of Carrollton was organized in April, 1885. Its authority extends one mile in every direction from the public square. It is a special board appointed by the mayor. It has six members, appointed for one year at a salary of $25 each. Three members are physicians. The president of the board is its executive officer; he is not a physician; is elected by the board and serves as chief health officer.

The police force is under control of the board for sanitary purposes. They make inspections twice each year and whenever complaint is made. The board meets semi-annually, and oftener if necessary. General powers are given as to sanitary matters, and its authority is independent of the council at all times. It can abate as well as define nuisances.

The board as yet has taken but little cognizance of defective house drainage and sewerage, and but little concerning possible contamination of water supplies. It advises the people concerning such matters. It orders cess-pools and privy vaults, when in bad condition, to be filled with earth and new pits dug. It looks strictly after the removal of garbage and also the cleansing of private premises.

It takes no notice of burials. In cases of small-pox, measles, scarlet fever and diphtheria, the patients are isolated; in small-pox and scarlet fever thoroughly and in the others only partially.

The board has discretionary power to remove persons sick with contagious diseases, but it only removes in cases of small-pox and isolates as far as possible in other diseases.

The vaccinal requirements are those promulgated by the STATE BOARD OF HEATH, but these are not generally enforced except in times of small-pox scares.

The board does not register vital statistics. Births, marriages and deaths become matters of record only as they are reported to the county clerk.

REGISTRATION AND STATISTICS OF DEATH AND OF DISEASE.—Burials occur without record of death. No permits are required. No local system of registration of causes of death is in force.

Cholera was epidemic in the city in 1853 and 1866, but there is no record of the mortality. Small-pox has never been epidemic, but sporadic cases occurred in 1867, 1873 and 1882. There were two deaths from the disease in 1873 and one in 1882. Scarlatina has prevailed at times during the past 24 years, but no record of mortality kept. Epidemics of diphtheria occur about every three years, while sporadic cases are had every year. No statistics. Since 1862 there have been three epidemics of cerebro-spinal fever, which were very fatal. No statistics. Typhoid fever has never been epidemic in the city, but cases occur every year. Mortality one in ten or fifteen cases.

The estimated number of inhabitants aged under 1 year is about 150; from 1 to 5 years, about 750; from 5 to 15 years about 800. Intermittent and remittent fevers and pneumonia are less prevalent than formerly, while typhoid and kindred diseases are more so. Immigrants from abroad and from other parts of the country seem to suffer from malarial diseases and diseases of the respiratory organs.

MUNICIPAL SANITARY EXPENSES.—Total amount of money appropriated for sanitary expenses last year, $1,000; for repair, etc., of streets, $1,200; for public urinals, $50; for expenses of the board of health, $250; total municipal expenses, $6,699.60.

PUBLIC SCHOOLS*.—The total number of scholars registered last year was 430, and the average attendance was 346. There is but one school, employing nine teachers. The school is in session six hours, divided thus: Recitations for each pupil one hour and forty minutes; studies, same; general exercises, two hours; recess, forty minutes. Pupils under eight years old are confined to the room four hours and ten minutes daily, to seat without change never longer than thirty minutes. In favor of two daily sessions. Young pupils usually stand during recitation, those over ten stand only when reciting or at the blackboard. Pupils under twelve years of age are not expected to study outside of school hours. From 15 to 18 years they are expected to study about two hours daily at home. There are two recesses of 20 minutes each. Intermission at noon of 90 minutes. School is held five days in the week, and with the exception of ten days at Christmas time the session is continuous from September 1 to June 1. Exercise in the open air is compulsory in fair weather for all under 14 years. There are no prizes given. All who reach a certain grade of excellence have their names published monthly in the city papers. The sexes study and recite together. Corporal punishment is used as a method of correction to a limited extent only. Detention after school for a certain class of offenders. Reproof and other mild punishments.

---

*Data furnished by DAVID FELMLEY, Principal.

Vaccination certificates are required from all pupils, though not on entering. This rule was first instituted in 1882 and is rigidly enforced. Since that time no case of small-pox has occurred among either scholars or teachers. Scholars from families where contagious diseases are prevailing are excluded from school until attending physician is of the opinion they may return. This rule is carefully enforced. About 50 per cent. of absences of pupils is due to sickness, as shown by "excuses." Co-education is preferred and but little over-study has been observed, owing to the association of the sexes.

The location of the public school building is in the extreme southern part of the city; the site is elevated; area one block 420 x380 feet; soil a porous clay with surface loam largely washed away; drainage good; building is of brick, erected in 1870, at a cost of $45,000. It is three-stories and basement; contains eleven rooms with a total capacity of 420. Is heated by stoves. The mean temperature of the rooms when school is opened is about 60 deg. F., at close about 70 deg. F. Teachers endeavor to maintain about 65 deg. F. Have very little trouble in this respect. Coughs and colds are traceable to variations and extremes of temperature. Rooms are ventilated by windows and transoms over doors, in the winter and summer. Ventilation is not entirely satisfactory. The privy arrangements are brick vaults fourteen feet square, fifteen feet deep, lined with brick. Copperas and chloride of lime are freely used in autumn and spring. The vaults (2) are on opposite sides of grounds, about 200 feet from school building and 150 feet from the wells. The basement of building is partly used for coal bin, one-half for waiting and play rooms and balance for workshop and general store room. It is ventilated separately from rest of building by windows. The water supply is from wells and unfailing. It is rich in carbonates. The location and arrangement of wells is such as to reduce organic contamination to a minimum.

The school rooms are sufficiently light, having about 90 square feet of surface for light to pass through in each room 24x25 feet. Distance of pupils from blackboards, charts, etc., on which they are expected to read letters, is usually ten feet, sometimes 25 feet. Rooms are small, can accommodate only 40 each. Pupils can exercise in the basement sheltered from the cold, heat or wet. Opportunity is had for drying clothes when wet on coming to school.

There are no special gymnastic or calisthenic apparatus. Play grounds are high and well drained; cared for by the janitor and kept in good condition. On the third floor of the building is a large study room 33x66 feet, which has 14 windows 2x8 feet. No pupil faces the light. Windows throughout the building are provided with hard wood blinds and white muslin curtains. On bright days light is admitted from the sides only; on cloudy days from rear also.

SANITARY SURVEY OF COLLINSVILLE.

BY C. R OATMAN, M. D., MAYOR.

LOCATION, POPULATION AND CLIMATE.—Collinsville, Madison county, is situated in latitude 38 deg. north and longitude 90 deg. west, on the line of the St. Louis, Vandalia, Terre Haute and Indianapolis railroad, about 20 miles east of St. Louis, Mo. It was founded in 1837 and incorporated first as a town in 1850 and again as a city in 1872. It had a population in 1860 of 1200; in 1870 of 2400 and in 1880 of 2889. Present estimated population 3500; estimated number under 5 years of age about 400. The native population is estimated at 1200 and the foreigners at 2300; negroes 300.

TOPOGRAPHY.—The surrounding country is hilly. On the west one and one-half miles from the city is a range of bluffs rising 600 feet above the sea level. There are no marshes or low lands in the vicinity. The city is surrounded by grass lands, forests and market gardens. The site of the city is rolling. The original conformation has not been changed, nor water courses diverted, covered or modified. The site of the city being hilly, it slopes in all directions. There is no "made land" in the city.

The only stream of water passing near is Cantine creek, having a width of 15 feet. It usually contains about 6 inches of water; current, gentle. In times of heavy rains it overflows its banks. The water is usually clear. No deposit of organic matter or silt is found in the bed of the stream. Within the city limits there is a small pond of water which in dry weather becomes stagnant and emits a perceptible odor. It has a deposit of organic matter and mud.

There are no overflows within the city limits but the character of the soil is such that in wet seasons the water level rises to within 5 feet of the surface without, however, any visible effect upon the general health. The wells during this time are filled within 3 to 5 feet of the surface, and when the soil becomes objectionable the purity of the water supply will become a matter of great moment.

The surface rocks found are magnesium limestone. The underlying strata in order of succession from above downward are:

Loam	1—3 feet
Yellow clay	50 “
Gravel	3—5 “
Blue clay	10—75 “
Blue shale	10—40 “
Limestone	1—15 “
Coal	5—7 “

The strata are about level. The character of the surface soil is alluvial and yellow clay. Slight malarial effects are observed when the surface soil is disturbed. There are no continuous fissures in the rocks or gravel streaks through which soil water may flow.

WATER SUPPLY.—The only source of water supply is from wells and cisterns. There are no public fountains, fire-plugs or artesian wells. The character of the soil where well water is used is clay and sand. Average depth of wells, 40 feet. Wells are not all located so as to be free from privy contamination, in many cases being within 8 or 10 feet of privies. In one ward of the city well water has been considered productive of sickness, causing typhoid fever.

DRAINAGE AND SEWERAGE.—The area included within the city limits is one square mile, about one-half of which is closely built up. The character and sufficiency of the surface drainage is considered good. A few underground drains have been put in by private parties. Cellars in a portion of the city fill with water during the spring rains, but it soon disappears. There is no system of sewerage in the city. Only a few private drains for cellars which discharge into an outlet sewer southwest of the city and outside the limits. The diameter of outlet sewer at mouth is three feet; it is constructed of round tile piping, tightly cemented. It is kept perfectly clean. No surface drainage passes into these drains.

STREETS, ALLEYS AND PUBLIC GROUNDS.—The general width of the roadways is 66 feet, and of alleys 30 feet; width of sidewalks, from 6 to 8 feet and made of boards, cinders and brick. Streets do not differ in healthfulness or comfort owing to direction. The total length of paved streets is 800 feet; material used is rock and cinders. The streets are not unduly wet in the spring of the year. Roadways are drained by side ditches. There are about 3 miles of wooden sidewalks. The only arrangements for watering the streets are cisterns and public wells. The result seems satisfactory. Shade trees of various kinds are planted along the streets. No direct effect upon health is noticeable from them. They are cared for both by individual owners and by the corporation. No portion of the sidewalk or roadway is laid down in grass. Property-owners are required to keep alleys clean. There is one public park 100 feet square belonging to the city, within corporation limits.

HABITATIONS.—There are 517 dwellings within the city limits. There are no municipal regulations concerning over-occupancy, nor the material or manner in which houses shall be constructed. One house was condemned last year as unsafe. There are no sources of water supply in any basement or cellar, nor are there privies in any of them.

About one-half of the dwellings are isolated with sufficient clear space all around them. There are no houses having special arrangements for ventilation. Cellars, as a rule, are not used for storing fuel, and in no case for the storing of ashes and sweepings. Basement floors are not usually cemented..

GAS AND LIGHTING.—The city is not lighted by gas. The business streets are lighted by oil lamps. No precautions are taken to ascertain the grade of burning fluids, nor are there any restrictions upon sale thereof. No accidents have occurred within five years from explosions of any fluid.

GARBAGE AND EXCRETA.—Kitchen refuse is required to be removed in covered vessels. Garbage, ashes, etc., are removed both by individuals and the city, as it accumulates, promptly and satisfactorily. Dead animals are taken away and buried. About six houses in the city have cess-pools for the delivery of kitchen and laundry waste water. These pools are porous; have no overflow; when full are emptied. A few houses have water closets, all the rest depend on privy vaults. These vaults, when full, are abandoned and new ones made. Neither water closets nor privies are connected with sewers or drains. No investigation has been made as to contamination of wells from privy or cesspool drainage. The dry earth system is not used.

MARKETS AND FOOD SUPPLY.—There are no public market places. Most of the marketing is done by wagons, driven over the city. Private markets and grocery stores where meats, fish, vegetables, etc., are sold, are all under the supervision of the board of health and it is effective to prevent the sale of unwholesome articles.

The supply of fresh meat, as to quantity, quality and variety, is good. No meat was condemned by the inspectors last year. Vegetables are brought to the city from surrounding gardens by wagon. About three-fourths of the fowls brought to the city are sold to consumers alive.

The supply of vegetables and fruits, as to quantity and quality, is good, and wholly derived from the immediate vicinity. No fruit or vegetables were condemned during the past year. There are no municipal regulations with regard to hucksters or peddlers. Fruits and vegetables are allowed to be sold without regard to quality. Producers may sell direct to consumers without the payment of any tax, and about one-third of them so sell.

The milk supply is furnished by dairies near the city and is of good quality. Cows are fed on grass, hay and corn.

No occasion has been had to enforce the State law concerning adulteration of food and drinks, but if necessary it will be done. No oleomargarine or analogous substance is sold as butter.

SLAUGHTER HOUSES AND ABATTOIRS.—Animals for the city markets are obtained from western and southwestern Illinois. The number annually consumed for slaughter is 850 cattle, 600 sheep, and 700 hogs, all for home consumption. No packing for shipment is carried on. Cattle are driven to place of slaughter; sheep and hogs taken on wagons. Animals in transit are supplied with food and water. They are not inspected before or after slaughter. Animals dying in transit are sold to rendering works.

There are no municipal regulations governing slaughter houses. They are within city limits, and are not considered a nuisance in their neighborhood. The fat, tallow and animal refuse is used for rendering; none of it is fed to hogs.

MANUFACTORIES AND TRADES. — There are no manufactories within the city limits that are considered nuisances. Restrictions are imposed upon such by local ordinance. Hours of labor in factories 7 to 12 A. M. and 1 to 6 P. M. No children are employed in factories. Space and ventilation of rooms occupied by work people generally satisfactory, as are also the arrangements for privies.

HOSPITALS AND PUBLIC CHARITIES.— There are no hospitals, asylums or almshouses, in or near the city, and no free dispensaries. No physicians are employed for the poor of the city

POLICE AND PRISONS.—The police force consists of one city marshal, who acts as an inspector of nuisances. There is no night patrol, other than one private watchman. There is one station house. Its average occupancy is one per month. Dimensions of cells, 6 by 9 feet. Prisoners are made to work on the streets. There are no jails, penitentiaries or houses of correction within or near the city.

There are 13 places in the city where intoxicating liquors are sold; no beer garden. The amount of malt liquor consumed annually in the city is estimated at 2,500 barrels; distilled spirits at 1,000 gallons. There were 25 cases of drunkenness brought before the police courts during the past year. One case of disease, induced by excessive indulgence in drink, was brought to the notice of the authorities during the year.

FIRE ESTABLISHMENTS.—The fire establishment is a volunteer one; alarms are given from bell on engine-house. There is one hand engine, one hose carriage and one dozen assorted ladders. Water supply for fires is obtained from public cisterns on the street; supply is abundant. Fire extinguishers are not in general use; a few are owned by private parties. The "Babcock" is most in favor. Annual expense of the department is about $600. Number of persons employed in fire department, 35. About $4,000 worth of property was destroyed by fire last year. There were no fires from the use of dangerous fluids; two from carelessness; none from spontaneous combustion or of incendiary origin. There are no regulations concerning the storage of gunpowder, nitro-glycerine, etc. The State law requiring doors of public buildings to open outward is not complied with.

Cemeteries and Burial—There is one cemetery within the city limits, and from 40 to 50 annual interments are made therein. There are three cemeteries near the city—the Catholic, public and German. There are about 1,000 graves in each and from 40 to 50 annual interments made therein. No springs or wells are known to be contaminated from sub-soil drainage from land containing graves; average depth of graves is 6 feet. Nature of soil yellow clay and dry at the depth at which the body is placed. No vaults are used. The decay of corpses is very rapid, as shown by exhumations. Soft parts in 3 years, bones 15 years.

No nuisance or evil effect has been observed from the cemeteries. Extra precautions are taken with regard to the burial of persons dying with contagious diseases. Burial permits are required. Appended are copies of the physician's certificate of death and the burial permit issued thereon:

PHYSICIAN'S CERTIFICATE OF DEATH.

Collinsville, Ill.,........................ 188

This certifies that ....

died of.., on the........day

of.....................188 .

Age.................. ....M. D.

BURIAL PERMIT.

No............. ......
Date ....188..
Name ....
Age ....yrs......day......mo.
Dr.................................
Disease ....

Number ....

BURIAL PERMIT.

OFFICE OF

CITY CLERK.

Collinsville, Ill.,................ 188

Permission is hereby granted for the burial of..........
......................who died at the age of ....years,
of................................as per certificate of Doctor
........................City Clerk

Public Health Laws, Regulations and Sanitary Officials.—Three persons appointed by the mayor constitute the board of health. Its authority is confined to the city limits. The members are appointed for one year and serve without salary. The mayor is ex-officio a member of the board, the present incumbent is a physician and is the only one on the board. The mayor acts as executive health officer. The board has as assistant health officers 2 physicians, 3 agents and 1 marshal. They all have police powers, and all make inspections. The board meets once a month and oftener, if necessary. It has no authority independent of the city council to make and enforce ordinances. It has authority to abate as well as define nuisances. In the matter of defective house-drainage, sewerage, contamination of water supply, bad condition of cess-pools and privy vaults, removal of garbage, condition of streets as to cleanliness, methods of burial and the disposal of night soil and organic wastes, the board enforces the remedies.

In all contagious diseases the patients are isolated. The board has no power to remove persons sick with a contagious disease to special hospital, but it enforces quarantine when necessary. No vital statistics are kept. They become matters of record only through reports to the county clerk. Causes of mortality are reported by physicians to city clerk. No record thereof is published.

REGISTRATION AND STATISTICS OF DEATH AND OF DISEASE.—Burials do not occur without record of death and permit granted by city clerk. [See above.]

Cholera has not been epidemic in Collinsville for over thirty years; yellow fever, never. There were two cases of small-pox in 1884, also 3 cases of scarlatina, 4 cases of diphtheria and 2 of typhoid, same year.

MUNICIPAL SANITARY EXPENSES.—The municipal sanitary expenses, paving, cleaning streets, etc., of the city last year were $4,607.96. The total municipal expenses were $8,163.37.

PUBLIC SCHOOLS.—The total number of public scholars registered is 677, with an average attendance of 535. There are three school buildings. Pupils recite about one-half of time, study balance. Recesses of 20 minutes; noon intermission 70 minutes. Pupils under 8 years old are confined to the room about one and one-half hours; to seats without change 20 minutes. Two sessions of school are favored, without recess. With the exception of the two highest classes the pupils all stand while reciting. No outside study is compulsory.

Morning session is from 9 to 11.50, with 10 minutes recess. Afternoon session from 1 to 3.20, with recess of 11 minutes. Holidays are Thanksgiving, Christmas and New Years, with the week intervening, and summer vacation from June to September. During recess and intermissions all scholars must pass out though they may return at once. No prizes are given as an incentive to study. The sexes study and recite together. Methods of correction are: reproof, loss of seat; corporal punishment, suspension, etc.

Rule 8 says: "No pupil shall be permitted to attend without furnishing evidence satisfactory to the principal that said child has been vaccinated, or otherwise secured against small-pox." This rule was adopted in 1873. Rule 9 reads as follows: "No child shall be admitted or continued in the school, known to be affected with a contagious disease, or coming from a family where such disease prevails." This is strictly enforced. There is rarely a case of absence from the school except sickness be the cause.

The opinion is expressed that it were better to have school buildings no more than two-stories in height; also, that it is perfectly safe for the sexes to have the same lessons and hours.

The location of the Webster school has good natural drainage. The building is of brick, built in 1872 at a cost of $35,000. It is three-stories high, contains 12 rooms, with an average capacity of 48 each. It is heated by hot air furnace; temperature of school rooms kept at about 70 deg. in cold weather. The rooms are ventilated by air chambers or flues and transoms over doors, in winter, and by lowering windows in summer. Ventilation is satisfactory. The privy accommodations are sufficient and satisfactory. Basement of building is used for fuel and furnace only. Two wells furnish an abundant water supply; no analysis of the water has been made, but it is considered good. The school rooms are well lighted—80 square feet of surface through which light passes in some and, in others, 100 square feet. Distances of pupils from blackboards, maps, etc., during recitation vary from two to 20 feet. Very little opportunity is had for pupils to exercise sheltered from cold, heat and wet, and no opportunity for drying clothes, when wet coming to school. The play grounds are 200x580 feet. The grounds are kept in good order. A variety of patterns of desks are used and all are satisfactory.

SANITARY SURVEY OF FREEBURG.

By ALEX. WOODS, M. D.

LOCATION, POPULATION AND CLIMATE.—Freeburg, St. Clair county, is in latitude 38 deg. 25 min. north and longitude 90 deg. west, on the line of the St. Louis, Alton and Terre Haute railroad, and twenty-four miles southeast of St. Louis. It was founded in 1836. Its population in 1860 was 600; in 1870, 940, and in 1880, 1,040. Its present estimated population is 1,000, of which number 150 are estimated to be under 5 years of age. The estimated number of Europeans is 200. There are no negroes, mulattoes or Asiatics. No meteorological observations have been recorded.

TOPOGRAPHY.—The surrounding country is undulating, sloping towards the south and west, and somewhat hilly on the east.

There are no marshes or low, moist lands in the vicinity. The site of the city is level. The original conformation has not been changed nor original water courses diverted, covered or changed. The general surface slope of the city is west and south. No part of the city is "made land." Small streams of water pass by the village one-half mile west and east. Their average width is about 20 feet, and depth 6 to 10 feet. The water is surface water and not clean. Bed of streams very muddy. No flat places or shoals are ever exposed. There are no bodies of water within or near inhabited portions of the city. The surface rocks are sandstone.

WATER SUPPLY.—The water supply is derived from wells and cisterns, exclusively. There are no public fountains. Wells are usually 25 feet in depth. In spring season the water rises to within 4 feet of the surface. Wells and cisterns are not always located so as to be free from privy contamination. Water rises in privies and is partly disseminated into wells. The well water is not good. There are no public baths or drinking fountains.

DRAINAGE AND SEWERAGE.—The area included within the city limits is three-fourths of a square mile. Streets are graded high in center, making fair surface drainage. Some tiling has been laid at a depth of four feet. There are no swamps or areas of "made land" near or in the town. Cellars in some parts of the city are liable to intrusion of soil water in the spring season and at times it is 3 or 4 months in disappearing. There is no system of sewerage in the city.

STREETS, ALLEYS AND PUBLIC GROUNDS.--There are no paved streets. They are unduly wet in the spring of the year. Sidewalks are constructed of wood and coal slack. Shade trees are planted along .outer edge of sidewalks. No direct effect upon health is noticeable from them. They are cared for by the village authorities. The alleys are 16 feet wide. No regulations are enforced as to the deposit of garbage therein. There is one public park—area one block—in center of the village. It is kept in good condition. Has no fountains or urinals. No watchman or other protection is afforded at railroad crossings. There are no street railways.

HABITATIONS.—There are about 200 dwellings in the village; no municipal regulations concerning over occupancy. About 10 dwellings have private drains. There are no privies in basements or cellars. No dwellings have special arrangements for ventilation, nor have proper bathing facilities. Cellars are not used for storing fuel, ashes or sweepings. It is not known whether any diseases have occurred due to overcrowding or bad conditions of cellars. The ground under basement floors is not cemented. No ill effects have been noticed from the use of arsenic paper in sleeping rooms nor from the wearing of dyed apparel.

Gas and Lighting.—The village is not lighted by gas. No precautions are taken to ascertain the grade and no restrictions exist on the sale of burning fluids. No accidents have occurred from explosions of these fluids during the past five years.

Garbage and Excreta.- The regulations relative to the removal of garbage are not enforced. Kitchen refuse is not required to be removed in covered vessels. Garbage, ashes, etc., are seldom removed. The health of the village is greatly impaired by offensive smells emanating from hog pens, in which the excrement is permitted to remain; if moved it is spread on gardehs or covered up. Dead animals are removed outside of the village boundary.

Markets and Food Supply.—There are no public markets. The supply of fresh meat as to quantity sufficient, as to quality fair. Meat, vegetables, fruits, etc., are derived from the immediate vicinity. Nothing of the kind was condemned as unfit for use last year. Fruits and vegetables are allowed to be sold without regard to quality. Producers may sell direct to consumers without payment of any tax; one third of them thus sell. No cases of poisoning or acute disease have occurred, due to unwholesome articles of food. No occasion to enforce State law concerning adulteration of food, drinks, etc. Oleomargarine is not sold as butter.

Slaughter Houses and Abattoirs.—Animals for village consumption are obtained from the surrounding country. No packing of meat for shipment. Slaughter houses are erected at private expense and are within corporation limits. They are considered nuisances in their neighborhoods, owing to offensive smells arising therefrom.

Police and Prisons.—The village police force consists of one marshal, who acts as inspector of nuisances. There is no night patrol. There is one temporary lock-up or station-house, in which both sexes are confined. Only occasionally does it contain an inmate. There are no jails, penitentiaries or houses of correction within or near the city, and no houses of prostitution or prostitutes. There are five places in the city at which intoxicating drinks are sold. There were no prosecutions last year for drunkenness.

Fire Establishments.—The fire establishment is a voluntary organization, and the only means of combatting a fire is one hand engine; no hook and ladder trucks. Supply of water is from wells. “Fire extinguishers” are not in use. No loss of life from fire during the past year, and only about $100 worth of property destroyed. Only 25 pounds of any explosives are allowed to be stored within the corporate limits. No measures are had to insure inspection of illuminating oils. The State law requiring doors of public buildings to open outward is complied with in part.

Cemeteries and Burial.—There are no cemeteries within the village limits, but three near by. Average depth of graves, 4 feet.

Nature of soil, clay, and damp at depth body is placed. Vaults are not in use. No extra precautions are taken with the bodies of persons dying of contagious diseases.

PUBLIC HEALTH LAWS, REGULATIONS AND SANITARY OFFICIALS.—There is no local board of health or municipal health organization. Duties pertaining to such an organization are performed by the village board. Night soil and organic wastes are removed outside of the village limits. The board has power to remove one sick with a contagious disease to a special hospital. There are no requirements respecting vaccination nor does the board register vital statistics.

REGISTRATION AND STATISTICS OF DEATH AND OF DISEASE.—Burials occur without record of death or permission granted by health authorities. No local system of registration of the causes of death is in force.

MUNICIPAL SANITARY EXPENSES.—No money was appropriated last fiscal year for sanitary purposes.

PUBLIC SCHOOLS.—There are 180 scholars registered in the public schools. Pupils are confined to the room 1 hour and 15 minutes at a time. Preference is expressed for one session with recess. Classes sit and stand during recitations. Recesses of one-half hour are had for exercise. Yearly vacations are holiday week and from May to September. Exercise in the open air is compulsory. Competition is not a feature of instruction. The sexes study and recite together. Various methods of correction are used, very little corporal.

No vaccinal condition of admission to the schools at present, but two years ago it was enforced. No cases of small-pox have occurred since then among teachers or scholars. Scholars from families in which contagious diseases prevail are not allowed to attend school. Seventy-five per cent. of the absences of pupils are due to sickness, as shown by the excuses. School buildings of three or more stories in height are not considered advisable. Some trouble with short-sightedness has been noticed among the pupils. The desks in use are considered defective. It is thought advisable for both sexes to have identical school hours, sessions and lessons, and such is the case here.

The site of the school building is level; surface, soil loam. The building is of brick and contains 4 rooms; capacity of each, 50. Cost, $4,000. It is heated by stoves; mean temperature of rooms in cold weather 70 deg. F. Rooms are ventilated by windows and transoms; not generally satisfactory, but no sickness is traceable to variations or extremes in temperature. The building has no basement. The water supply is from wells and is abundant. It has not been analyzed but is soft and considered good. The school rooms are well lighted, two of them having 105 square feet and the other two 144 square feet each, of surface through which light enters the room. Pupils at recitations are about 10 feet from blackboards, charts, etc. No opportunities are had to exercise sheltered from cold, heat or wet, and no provision for drying clothes that are wet on coming to school. Play-grounds are 70x100 feet. The grounds are kept in good condition.

SANITARY SURVEY OF MT. VERNON.

BY HIRAM S. PLUMMER, M. D., (the Mayor) AND A. C. JOHNSON.

LOCATION, POPULATION AND CLIMATE.—Mt. Vernon, the county seat of Jefferson county, is situated in latitude 38 deg. 20 min. south, longitude 88 deg. 90 min. west, on the lines of the St. Louis & Nashville, and Louisville & Evansville railroads, 76 miles southeast of St. Louis. It was founded in 1819—twenty acres being laid out; in 1840 74 acres additional were added in "Storm's Survey." It was incorporated as a village June 13, 1864, and as a city in 1872. The population in 1860 was 650; in 1870 it was 1,167, and in 1880, 2,324. The present estimated population is 3,500; of this number 500 are estimated to be under five years of age. There are about 200 foreigners, all Europeans, and about 100 negroes. No meteorological observations have been recorded.

TOPOGRAPHY.—The surrounding country is hilly on the north, undulating on the west, level on the south and low bottom lands on the east. There are no marshes or moist lands, but the "bottom lands" referred to are about 60 rods wide and are overflowed once in two or three years from Casey's Fork of Muddy Creek. The altitude above the sea level of the bottom of the lowest valley near by is about 500 feet. Its trend is north and south. One-half mile west of city extends a ridge 60 feet higher than the bottom lands, with a northeast and southwest trend, which seems to avert storms passing over the city. The city is bordered on all sides by farms and grass lands, the latter in the proportion of about one-third.

The site of the city is gently undulating. Its original conformation has not been materially changed, only a few small ravines covered. The highest, lowest and average elevations of the city above sea level are 560, 500 and 535 feet respectively. The general surface slopes of the city is to the east and south. No part thereof is "made land." Casey's Fork of Muddy Creek runs south one and one-fourth miles east of the county court house, and there is also a small stream just northwest of the city. The average width of the former is about 25 feet, of the latter five feet. Average depth of former two feet; of latter six inches. In times of heavy rains they are quite rapid, but in summer the smaller dries up, while Casey's Fork comes to a standstill. The banks are generally steep. The exposed shore ground is largely gravel, some mud. The water is nearly always turbid. But little deposit in bed of streams; chiefly organic (vegetable). There are many shoals and flats laid bare in times of dry weather. There are no natural or artificial falls of water in or near the city. Tiling is laid from the county jail and court house—from two to eight feet under ground—to Casey's Fork, emptying their sewage therein. Surface drainage of the city empties into the same. There is a small pond of water—area one-quarter of an acre—just west of the city limits, and one of 15 acres one-quarter of a mile further west used by the railroad and machine shops. Their water is clear, and does not become stagnant. The soil in the southern portion of the city becomes saturated in wet seasons, causing an apparent increase of typhoid fevers. Wells in this vicinity usually fill up at this time.

The site and vicinity belong to the quarternary period; surface rocks are sandstone. The underlying strata in order of succession from above downward are sandstone, arenaceous and argillaceous limestone and shale, of which the sandstone is most permeable to water. The dip of the strata is southeast about 2°. The character of the surface soil is first, vegetable loam 6 to 18 inches, then subsoil clay with some gravel, 15 to 20 feet. The bottom lands are alluvial. When the surface soil is disturbed malarial effects are generally observed. There are not many continuous fissures in the rocks, nor gravel streaks through which soil water may flow, but in very dry weather fissures form in the subsoil and surface water reaches many of the wells when the rains come. No diseases are believed to be due to the soil or geological formation other than the malaria above mentioned, nor has the spread of any epidemic followed the direction of the flow of underground water.

WATER SUPPLY.—The source of Mt. Vernon's water supply is from wells and cisterns, chiefly and increasingly from the latter. Twenty per cent. of the cisterns have filters. There are no public fountains or fire plugs, and no artesian wells. There are four public wells and two springs, one of the latter being mineral. Wells are scattered all over the city. Their usual depth is 20 feet to bottom, 10 to 15 to surface of water. In nearly all cases the wells and cisterns are located so as to be free from cesspool or privy contamination. In one or two cases well water has been productive of sickness. No diseases have arisen from use of lead pipes. There are no public baths or drinking fountains.

DRAINAGE AND SEWERAGE.—The area included within the city limits is 800 acres; distance north and south being one mile, east and west one and one-quarter miles. About three-quarters of this area is closely built up. The character and sufficiency of the surface drainage is natural and good except that of a flat strip on the south side. Underground drains have been constructed in about 10 per cent. of the area closely built up. They are placed at a depth of 8 feet at highest part and have a fall of from 2 to 6 inches to the rod. There are no swamp lands in or near the city underdrained. A few cellars in the southern and eastern portions of the city are liable to intrusions of soil water in heavy rains. There is no system of sewerage in the city; one sewer running from the court house and jail to Casey's Fork and a few private drains constitute all the sewerage. They are nearly all built of tiling, and are kept fairly clean. There is little or no house drainage, many cellar drains conducting to open ditches for use in wet weather, but not for sewage.

STREETS, ALLEYS AND PUBLIC GROUNDS.—The main streets of the city are 60 feet wide, side streets 40 and 50 feet. Sidewalks on main streets 8 and 10 feet, on others 3, 4 and 5 feet. They are constructed altogether of wood, mostly oak, though the use of pine is increasing. Streets do not differ in healthfulness or comfort owing to direction. None of them are paved. It is contemplated paving some with broken limestone. Total length of unpaved streets 15 miles. The character of the soil is a vegetable mould with clay sub-soil. In the spring of the year streets are unduly wet. The roadways are thrown up in the middle, having ditches on the sides. The city marshal attends to the cleaning of them and does it satisfactorily. They are not watered. There are thousands of shade trees in the city, planted by individuals; they are placed about 8 feet from the outer line of street and from 1 to 2 rods apart. They consist of all kinds of forest trees, the maple predominating. They have no perceptible effect upon health. They are cared for by property owners, and the city imposes a fine of $5 for hitching horses to them. No portion of the sidewalk or roadway is laid down in grass.

The general width of the alleys is 16 feet. The deposit of ashes, garbage, manure, etc., therein is forbidden by local ordinance. The city marshal notifies property owners to clean alleys whenever necessary. There are no public parks in the city, but there are two open square areas of one and two acres respectively. There are no public urinals in the streets. No arrangements are had for watchmen or gates at railroad crossings within the city, but no lives have been lost through lack of precautions during the past five years. There are no street railroads.

HABITATIONS—There are about 560 dwellings within the city limits, 90 per cent. of which are inhabited by the owners. The average occupancy of each dwelling is 6, and the rate is about the same in all parts of the city. There are perhaps 20 tenement houses occupied by two or more families; none of them are over tenanted. There are no municipal regulations concerning overoccupancy. No wooden buildings are allowed to be built within an area of 20 acres surrounding the public square. No houses were condemned as unsafe or unfit for habitation for sanitary reasons last year. There are no sources of water supply in any basements or cellars in the city, nor are there any privies or water-closets so located, except in the county court house and jail.

About 98 per cent. of the dwellings are isolated, having good space all around them. No special arrangements are made for ventilation in any of them. Houses having neither basements nor cellars are in nearly all cases sufficiently raised from the ground to allow of sub-ventilation. In the eastern and southern portions of the city there are perhaps a dozen cellars damp and insufficiently drained. Less than one per cent. of the habitations are provided with proper bathing facilities. In 2 or 3 cases cellars are used for storing fuel. In no cases are ashes and sweepings deposited therein.

A case or two of typhoid and several of chills have occurred, due to dampness and unfitness of dwellings. The fuel used has no perceptible influence upon health. The ground under basement floors is usually cemented. No ill effects have been observed from arsenic paper in sleeping and living rooms, nor from the use of dyed wearing apparel.

Gas and Lighting.—The city is not lighted by gas. No precautions are taken to ascertain the grade and no restrictions exist on the sale of burning fluids, kerosene, etc. No accidents have occurred from explosions of these fluids within five years.

Garbage and Excreta.—The removal of garbage is provided for by local ordinances which are fully enforced. Kitchen refuse is not required to be removed in covered vessels. Garbage, ashes, etc., are removed by private individuals outside of the city limits at their own expense. Removal of the same is made as often as occasion requires; it is either buried or burned. The removal is satisfactorily performed and no nuisance is created or damage to health has resulted from infrequent removals. The expense to householders for this purpose last year was about $500. All that part of the garbage that will burn is so disposed of. Dead animals are carted away and buried; perhaps 50 were so disposed of last year in a satisfactory manner.

No premises have cess-pools for the delivery of kitchen and laundry waste water. There are no water closets in dwellings; nearly all depend on privy vaults, about one-half of which are water-tight. No cases of contamination of wells or cisterns by privy drainage are known. Dry earth and lime are being generally used as disinfectants. also copperas, etc. Some dejections are received in a keg or box and the accumulation is buried or sold to parties for fertilizers.

Markets and Food Supply.—There are no markets established by law. Meats, fish, vegetables and fruits are sold at all grocery stores. There is nothing to prevent the sale of unwholesome articles except the competition of business men and vigilance of buyers. The supply of fresh meat is abundant and quality and variety good. About four-fifths of the fowls brought to the city are sold to consumers alive. The supply of vegetables and fruits is abundant and of good quality, about three-fourths of the supply coming from the immediate vicinity. No fruits or vegetables were condemned by the inspectors last year. There are no municipal regulations concerning hucksters, peddlers, etc., hawking fruits, etc., about the streets. Fruits and vegetables are allowed to be offered for sale without regard to quality. Producers may sell direct to consumers without tax, and about 10 per cent. of them so sell.

Many families in the city keep cows and thus furnish their own milk supply. There are two dairies near the city. Cows are not fed on distillery swill. No cases have been reported of poisoning or of acute diseases caused by unwholesome articles of food, canned or tinned meats, etc. There has been no occasion to enforce the State law relative to adulteration of food, drinks, etc. No oleomargarine or analogous substance is sold as butter.

Slaughter Houses and Abattoirs.—Animals for the city markets are obtained from farmers throughout the county. There are annually slaughtered for city consumption about 425 beeves, 425 hogs and 100 sheep. As a rule they are driven on foot to the place of slaughter. They are not inspected either before or after slaughter.

Slaughter houses are erected at private expense, permission to build being first obtained from the city council. The business is conducted in small establishments beyond the city limits. They do not drain into covered or open sewers flowing through any part of the city, and are not considered nuisances in their neighborhoods. Fat and tallow are rendered and refuse fed to hogs; not, however, kept for that purpose. Hogs are also corn-fed. Generally the rendering is done on the day animals are slaughtered. Ice-boxes are used for cooling meat in warm weather.

Manufactories and Trades.—There are no manufactories within the city limits considered nuisances. There are two machine shops and one woolen factory in the city. Women are employed in the woolen mills, but it is not known that they are subject to any diseases owing to their occupation. The hours of labor in all are from 7 A. M. to 12 M. and 1 to 6 P. M. Children under 12 years are not employed in any factory. The cubic space and ventilation of the factories are generally satisfactory, as are also the privy arrangements.

Hospitals and Public Charities.—There are no hospitals, almshouses, infirmaries or asylums in or near the city, and no physician is employed for the poor other than those by the county.

Police and Prisons.—The police force consists of the city marshal and three deputies, who all act as inspectors of nuisances. One of the force acts as night patrol. There is one temporary lockup in which both sexes are confined, but in separate apartments. The dimensions of cells for single prisoners are 12x12 feet and 8 feet high. Vagrants are not kept separate from prisoners. We seldom have any vagrants. Water closet arrangements consist of a sink connected with the sewer from county jail. There are no facilities for bathing inmates.

The county jail of Jefferson county is within the city limits. The average occupancy is 2. Dimensions of single cells, 6x7 feet and 6 feet high; ventilation by doors and windows. No epidemics have ever occurred among the prisoners; there are no restrictions as to their diet, and no work is required of them. There are no houses of prostitution, but perhaps 6 or 8 prostitutes in the city. The license system has never been tried.

There are 5 licensed saloons in the city for the sale of intoxicating drinks. About 400 barrels of malt liquors and about 75 barrels of spirituous liquors are sold annually. Eleven cases of plain drunks were brought before the magistrates last year, besides many others where drunkenness was associated with the offense. The municipal regulations with regard to the sale of intoxicating drinks are enforced.

FIRE ESTABLISHMENTS.--The fire establishment is a voluntary one, the members serving gratuitously. No alarm other than bell, which system answers present needs. The apparatus is composed of 2 hand fire engines, 1 hook and ladder truck and 1 hose carriage. Water supply for fires is obtained from public and private wells and cisterns. There are no fire extinguishers in use. The annual expense of the department is $300. One medical man is connected with it, who serves voluntarily.

The loss of property by fire last year was $500. There were two fires from carelessness and one of incendiary origin. There are no local ordinances regulating the storage of gunpowder, nitroglycerine, etc., and no measures are taken to insure inspection of illuminating oils. The State law requiring doors of public buildings to open outward is complied with.

CEMETERIES AND BURIAL.—There are no cemeteries within the city limits, but one, Oakwood, is one-fourth of a mile west. It contains about 60 graves, and 25 interments are annually made therein. The subsoil drainage from the land containing graves is not thought to contaminate water courses. The average depth of graves is about 5 feet; the soil is usually dry at this depth. The character of the soil is surface loam and clay subsoil. There are no vaults. No nuisances or evil effect has ever been noticed from the cemetery. No extra precautions are taken with persons dying of contagious diseases. Burial permits are not required.

PUBLIC HEALTH LAWS, REGULATIONS AND SANITARY OFFICIALS.—There is no board of health as yet. A recent ordinance provides for one, but no organization has been effected under it. The city council and the marshal perform such duties. The only physician in the present body is the mayor. Inspections are made on complaint or otherwise. The council meets monthly. An annual house-to-house inspection is made and all sanitary defects are endeavored to be remedied.

In cases of small-pox the patients are isolated. There are no requirements concerning vaccination. Vital statistics are not registered; they only become matters of record as they are reported to the county clerk.

REGISTRATION AND STATISTICS OF DEATH AND OF DISEASE.—Burials occur without permit. No local system of registration of the causes of death is kept. None of the following diseases have ever been epidemic in the city: Typhoid fever, cholera, yellow fever, small-pox, scarlatina, diphtheria, cerebro spinal fever. Malarial fevers are less prevalent than formerly, while pneumonia, phthisis, catarrh and neuralgia are more frequent. Neither immigrants from abroad nor from other parts of the country seem to suffer from the climate.

MUNICIPAL SANITARY EXPENSES.—There was no special appropriation for sanitary purposes last year. About $4,000 was spent in repairing streets and sidewalks, and perhaps $100 by individuals for trees; for street cleaning about $10 by the city, and $250 by individuals. The total municipal expenses during the year were about $5,000.

PUBLIC SCHOOLS.- The total number of scholars registered in the public schools is 782, with an average attendance of 547. There is one school, having 11 grades. All ages are confined like hours. School opens at 9 A. M. and closes at 4 P. M.; one and one-half hours intermission at noon with 15 minutes' recesses morning and evening. The two-session plan seems satisfactory. Classes sit during the recitations. No classes are compelled to study outside of school hours; many scholars do so, however. The actual time devoted each day to outdoor exercise is about two hours. Vacations are a week or two Christmas time, and from June to September. Exercise in the open air is not compulsory. No prizes are given, the only competition being for grades, on examination monthly. The sexes study and recite together. Methods of correction and punishment are—take off grade, send scholar to principal and detain five to 30 minutes after school is dismissed.

There are no conditions of admission to the school with reference to vaccination. About four years ago all were vaccinated, but no special action has been taken since. No case of small-pox among the teachers or scholars has occurred in the last four years. Scholars from families in which contagious diseases are prevailing are not allowed to attend school. No cases of short sight among pupils except congenital. No evil effects have been observed as to competition between the sexes, nor their having identical school hours, sessions and lessons.

The location of the school premises is on the same level as the city generally; northwest of the school site runs a small ravine about 20 feet deep; the area of the premises is 2 acres. There is one building of brick, built partly in 1866 and completed in 1883, and a small frame building for primary purposes, built in 1884. The cost of buildings was $20,000. They are 2 stories high, heated with stoves. Temperature in cold weather irregular, but no sickness has been traceable to it. School rooms during winter and summer are ventilated by the windows largely and by registers in the walls. It is satisfactory. The privies are large—separate ones for boys and girls—drain into ravine above named.

There is no basement to the building. The water supply is derived from two cisterns and one well, and is abundant. The number of square feet of surface through which light passes into each room is from 100 to 200. The distance of pupils from blackboards during recitation is 10 to 30 feet. There are no opportunities for exercise sheltered from heat, cold or wet, and no provision for drying wet clothes. The play-grounds are two acres, nearly level, with plenty of shade and well kept.

SANITARY SURVEY OF ROCKFORD.

By E. E. ODER, M. D.

LOCATION, POPULATION AND CLIMATE.—Rockford, the county seat of Winnebago county, is situated on Rock river, 91 miles northwest of Chicago, on the Galena division of the Chicago and Northwestern railway; latitude 42 deg. 14 min. north, longitude 89 deg. 5 min. west (Greenwich.) The first settlement was made at this point in August, 1834. The city was organized April 26, 1852, under a legislative act entitled, "An act to incorporate cities and towns," passed February 10, 1849, legalized and amended February 8, 1853; reorganized March 4, 1854, under special charter, which was several times amended, viz.: February 14, 1855; April 26, 1859; February 22, 1861, and February 15, 1865.

April 30, 1881, the city surrendered its special charter, and May 1, 1881, organized under the State law, entitled, "An act to provide for the incorporation of cities and villages." (In force July 1, 1872.)

In 1860 the population numbered 6,979; in 1870, 11,049; in 1880, 13,136. A school census taken in April, 1886, places the number of inhabitants at 19,500, 2,469 being children under school age. A census taken in the spring of 1887, in connection with the compilation of a city directory, gives the population as 21,217, an increase of 1,717 over the school census of the previous year, [illegible] 8,081 over the U. S. census of 1880. The following table, showing the nativity of the inhabitants, is taken from the advance sheets of the same directory:

Sweden	3,836	Wales	16
Ireland	791	Nova Scotia	3
England	478	China	2
Germany	434	Austria	1
Scotland	219	Spain	1
Norway	108	Isle of Man	3
Canada	92	Saxony	1
Switzerland	51		
Italy	49	Total foreign born	6,144
France	37	United States	15,073
Denmark	22		
		Total population	21,217

Of those born in the United States about 50 are negroes.

Mr. T. D. Robertson, volunteer observer for the United States Meteorological Department, has taken observations regularly since 1872. A part of these will be published in the next U. S. Signal Service Report. The following are Mr. Robertson's measurements of the rainfall:

PRECIPITATION AT ROCKFORD BY MONTHS AND YEARS.

Years.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.
1872–73	......	......	1.10	1.17	2.89	0.24	2.50	1.66	5.06	3.96	2.32	2.82
1873–74	1.68	1.72	1.63	2.36	4.87	0.83	1.01	1.23	1.09	3.39	0.90	1.19
1874–75	5.97	1.00	3.34	0.89	0.75	1.56	0.59	3.06	2.25	6.21	5.96	2.15
1875–76	3.56	2.34	0.50	0.65	3.76	2.91	2.84	3.83	6.06	4.25	5.80	2.42
1876–77	4.71	1.50	4.37	0.41	3.06	0.03	5.53	3.99	2.20	4.32	1.96	4.04
1877–78	0.61	6.15	3.90	2.00	0.65	0.52	3.63	3.44	4.20	3.48	5.75	1.99
1878–79	0.85	6.03	0.78	1.48	0.71	1.32	0.91	2.76	2.19	3.63	6.98	3.06
1879–80	0.40	1.93	5.35	1.18	3.19	1.92	2.70	4.53	4.11	5.88	1.74	2.98
1880–81	3.51	1.20	1.94	0.60	1.71	6.50	3.49	1.38	2.39	6.44	7.72	0.33
1881-82	3.72	5.37	2.17	2.99	1.19	2.01	3.54	5.15	3.42	5.69	2.96	3.82
1882–83	0.93	3.32	2.24	2.49	1.98	3.76	0.57	1.96	6.39	4.21	3.96	1.50
1883–84	0.92	6.66	3.87	1.58	1.42	1.91	2.88	3.45	3.43	6.16	6.13	3.68
1884–85	3.85	6.24	1.99	6.51	3.39	2.50	0.26	4.33	2.39	5.47	4.50	9.18
1885–86	4.64	3.95	1.96	3.57	5.87	3.40	4.55	4.36	4.93	2.74	0.35	8.42
Means	2.72	3.65	2.51	1.99	2.46	2.10	2.50	3.22	3.58	4.63	4.07	3.40

PRECIPITATION BY SEASONS AND ANNUAL TOTALS.

Years.	Autumn.	Winter.	Spring.	Summer.	Annual.
1872–73	....	4.30	9.22	9.10	*23.72
1873–74	5.03	8.06	3.33	5.48	21.90
1874–75	10.31	3.20	5.90	14.32	33.73
1875–76	6.40	7.32	12.73	12.47	38.92
1876–77	10.58	3.50	11.72	10.32	36.12
1877–78	10.66	3.17	11.27	11.22	36.32
1878–79	7.06	3.51	5.86	13.67	30.70
1879–80	7.68	6.20	11.34	10.60	35.91
1880-81	6.65	8.81	7.26	14.49	37.21
1881-82	11.26	6.19	12.11	12.47	42.03
1882–83	6.49	8.23	8.92	9.67	33.31
1883–84	11.45	4.91	9.76	15 97	42.09
1884–85	12.08	11.40	6.98	19.15	49.61
1885–86	10.55	12.84	13.84	11.51	48.74
Means	8.91	6.55	9.30	12.17	37.43

TOPOGRAPHY.—The site of the city has not been changed from its original conformation. It lies in a basin, surrounded by high rolling land, and is bordered on every side by grass lands, market

---

*For ten months only in 1872-73.

gardens and farms. There are no marshes or low lands in the vicinity. A little southwest of the city the river banks are formed into a succession of hills or bluffs from 50 to 75 feet above the river level. The general surface slope is from northeast to southwest, following the river; and there is very little level ground within the city. The water courses have not been diverted, covered, or in any way modified. The bottom of the lowest ravine in the vicinity is 732 feet above sea level and trends southwest; the highest elevation is 772 feet, and the average (being also the average elevation of the city) is 752 feet above sea level. The site and vicinity is drained by Rock river, Kent's creek with its two branches, and Keith's creek –all passing through the city. The average width of the river is about 500 feet, of Kent's creek 20 feet, and of Keith's creek from 4 to 8 feet. All are rapid streams with steep banks, the exposed shore being, in most places, hard ground. Rock river is said to be the clearest and purest stream in the State. The bottom is rocky and sandy, the current swift and strong, and its flow and volume constant. Only a limited area along the river bank is subject to overflow or saturation in the spring; and at no season of the year is any considerable area of the river bed or shoals laid bare. In a few wells, near the river, the depth of the water is affected by the overflow of the river and saturation of the soil. The shores are subject only to a very slight extent to the deposit of organic matter. There is a dam across the river with a fall of about seven feet, above which the water is not deep, but has a good current. The sewage and surface drainage of the city enter the river above the dam; a tannery and a private sewer drain into Kent's creek, and a soap factory into Keith's creek. The site and vicinity is underlaid by the Galena limestone and the upper portion of the Trenton group. The underlying strata in order of succession from above downward are:

Drift	180	feet
Trenton limerock	30	"
St. Peter's sandstone	200	"
Magnesia limerock	100	"
Red marl	85	"
First strata, Potsdam sandstone	140	"
Blue shade (Cincinnati group)	100	"
Second strata, Potsdam sandstone	1,165	"

The first 500 feet of the second strata is a white sand then it becomes pink, and gradually becomes red. This was found in an artesian well in this city, which was drilled 2,000 feet deep. The limestone and shale are not permeable; all the sandstone is water-bearing rock. The slope is from northwest to southeast by south—the angle at this point being very slight. The surface soil is loam, clay, gravel and sand. Of late years no malarial effects have been observed to follow its disturbance. Gravel underlies the greater part of the city, and in some places there are fissures in the rocks, so that the soil water easily flows off. No diseases are believed to be due to the soil or geological formation, nor has the spread of any epidemic seemed to follow the direction of the flow of underground water.

WATER SUPPLY.—The water supply is from artesian wells; three are completed and a fourth is in process of construction—the first 1,500, the second 1,400 and the third 2,000 feet deep. The water flows from the wells through 12-inch iron pipes, into a pumping pit of 75,000 gallons capacity; the pit overflows into the river. About one-third of the houses are supplied from these wells, and have proper bathing facilities. There are also five public drinking fountains with a continual flow, and 235 fire plugs. No disease is thought to have arisen from the use of lead pipes.

The average daily water supply is about 1,287,285 gallons, the maximum 1,886,685, and the minimum 902,460—or an average of 61, a maximum of 90 and a minimum of 41 gallons to each inhabitant. When the fourth well is completed the average daily flow will amount to about 4,000,000. The pumps are so arranged that water from the river can be forced through the same mains, thus furnishing an inexhaustible supply in case of fire.

The water is gathered in the Potsdam sand-stone district of central Wisconsin; no filtering or purifying process is used, as there is believed to be very little if any chance of organic contamination reaching the strata from which the wells are supplied; and the water has never been offensive in taste or odor. Below is given the report of a chemical analysis made by Erastus G. Smith, Ph. D., Prof. of Chemistry, Beloit College:

CHEMICAL ANALYSIS OF THE WATERS FROM THE ARTESIAN WELL NO. 3, AT ROCKFORD, COLLECTED NOV. 20, 1886:

	Parts per 1,000 of water.
Potassa	.0047
Soda	.0101
Magnesia	.0599
Lime	.0782
Alumina	.0024
Iron oxide	.0006
Phosphoric acid	trace
Carbonic acid (calculated)	.1308
Sulphuric acid	.0075
Chlorine	.0029
Silica	.0104
Total	.3075
Less oxygen equivalent to chlorine	.0006
	.3069

These acids and bases are probably combined as follows. For the sake of ready comparison the analyses from wells Nos. 1 and 2 are also added:

	Parts per 1,000 of water.		
	Well 1, depth 1520 ft.	Well 2, depth	Well 3, depth 1996 ft.
Potassium sulphate	.0090	.0090	.0086
Sodium sulphate	.0095	.0054	.0061
Sodium chloride	.0062	.0059	.0047
Sodium phosphate	trace	trace	trace
Sodium carbonate	.....	.0036	.0088
Calcium carbonate	.1396	.1393	.1395
Magnesium carbonate	.1258	.1268	.1262
Alumina	.0009	.0018	0024
Iron oxide	.0006	.0007	.0006
Silica	.0107	.0010	.0100
	.3023	.2935	.3069
Total solids actually weighed, after evaporation of 1,000 grammes of water and heating the residue to 180 degrees C	.3180	.2952	.2968

As it may be preferred to read these results in terms of grains, per gallon, these analyses are repeated below calculated to grains per United States gallon, as the solids are probably actually dissolved by the water:

	Grains per U. S. gallon, 231 cubic in.		
	Well 1.	Well 2.	Well 3.
Potassium sulphate	.5248	.5248	.5015
Sodium sulphate	.5277	.3149	.3557
Sodium chloride	.3614	.3440	.2740
Sodium phosphate	trace	trace	trace
Sodium bicarbonate	.....	.4140	.8164
Calcium bicarbonate	13.1848	13.1565	13.1737
Magnesium bicarbonate	12.7949	12.8532	12.7989
Iron bicarbonate	.0799	.0932	.0799
Alumina	.0524	.1049	.1399
Silica	.6240	.0583	.5831
Total	28.1499	27.8638	28.7231

It is evident, therefore, that the waters from this third well, though taken from a much lower level, are, practically, identical with those of the first two. The difference, as before, not exceeding four parts per 1,000,000 of water in any determination, except in the cases of the silica and carbonate of soda, and the slight amount of these can hardly influence the water to any appreciable extent.

The uniformity of supply, so far as quality is concerned, is assured, and can be used for all ordinary domestic purposes with perfect safety.

The temperature of the water of the new well is 60 degrees above. The temperature of the other wells is 56 degrees. The extra four degrees of warmth was occasioned by the greater depth to which the last well was drilled. The difference, however, will not be perceptible.

There are about 3,200 cisterns in the city; about 1,200 are used for all purposes; about 1,400 families use well water. The wells are from 25 to 80 feet deep, dug in gravel, sand and clay, and some in lime rock. No analysis has been made of the water, but, as a rule, it is not believed to be free from contamination, owing to the nature of the soil and the close proximity of privy vaults, cess-pools and filth of all kind, to the wells. However, the use of the water is not positively known to be productive of sickness of any kind.

Drainage and Sewage.—The area included within the city limits is about six and one-half square miles, about three-fifths built upon and about one-half closely built up. There are no swamps, areas of "made land" or places saturated with water in or near the city and but few cellars are subject to overflow in heavy rains or to the intrusion of soil water.

The city has just begun to develop a system of sewerage. There are two outlet sewers, each about a mile long, discharging into the river; constructed of vitrified, glazed sewer-pipe, about 16 inches in diameter, of circular form and tightly cemented. There is a slight deposit in some of them but they are kept free from obstruction by flushing when necessary. Subsidiary sewers have been put down without any record or permit, consequently no accurate information can be obtained as to their size, construction or shape. These receive the surface drainage, and their capacity seems to be sufficient even in heavy storms. No attempt is made to utilize the sewage. There are no municipal regulations concerning drains connecting houses with sewers; traps are put in as plumbers direct. The sewers are ventilated by perforated covers to man-holes, and odors are quite perceptible from openings and outlets.

STREETS, ALLEYS AND PUBLIC GROUNDS.—There are 90 miles of streets; general width of roadway, 50 feet (which is being gradually reduced); general width of sidewalks, 4½ feet, mostly of wood. The soil is composed of sand and clay, and the streets are not unduly wet even in the spring of the year. There are no pavements; but about 10 miles of roadway constructed of rubble and gravel not underdrained. The streets are cleaned and watered when necessary; this is done at the expense of the city, and is generally satisfactory. Trees are planted and cared for by individual property owners, generally about 8 or 10 feet from the front lines of the adjacent lots and at various distances apart; they have no direct effect upon health. No portion of the sidewalk or roadway is laid down in grass. General width of alleys is from 18 to 20 feet. There is a city ordinance forbidding the throwing of ashes, manure, garbage, etc., in alleys. Each householder is required to keep his own alley clean. There are five public parks within the city limits; one 265x330 feet, one 330x330 feet and three small triangles. Their management is entrusted to commissioners appointed by the mayor, who receive all moneys contributed or raised for such parks and expend it in improving them in whatever manner they may deem best. They receive no compensation for their services. The parks are kept in good condition, and each has a public drinking fountain. There are no pubic urinals.

Only one railroad crossing in the city has gates, but others will be constructed in a short time. Several serious accidents have resulted from the want of gates and watchmen at the crossings, but no lives have been lost during the past five years. One accident occurred last year on the street railroad.

HABITATIONS.—The city contains 3,500 dwelling houses, five-sevenths of which are inhabited by the owners, the average occupancy being about six persons to each house. There are about 500 tenement houses occupied by two or more families; very few of these are over-tenanted. There are no municipal regulations concerning over-occupancy. An ordinance against building wooden houses within the fire limits is strictly enforced. No houses have been condemned as unsafe within the past year, but one was condemned as unfit for habitation on account of insanitary condition. Very few houses are connected with the sewers, all that are, as far as is known, have traps and tight drains. A few have cisterns —but there are no wells, springs or privies—in basements. All the dwellings are isolated buildings with sufficient yards or clear space all around them—most of them are properly raised from the ground and suitably arranged for sub-ventilation.

The cellars are generally used for storing fuel; those near the river and a few in other parts of the city are damp or insufficiently drained. Scarlet fever and diphtheria have, in one or two instances, been attributed to stagnant water in cellars—the death of two children last spring is believed to have been due to this cause. The ground, under basement floors, is usually cemented. The Ruttan system of ventilation is in use in the high school building, and the new Methodist church and a number of dwellings have special arrangements for ventilation. The fuel used does not seem to have a deleterious influence upon health. No ill effects have been observed from arsenic paper in sleeping and living rooms, or from any other wall-paper, or from dyed wearing apparel.

Gas and Lighting.—The gas-works are located in the central part of the city on the river bank; they are not considered a nuisance; the refuse flows into the river. No analyses of the gas have been made and no tests of its illuminating power. About one-fourth of the dwelling houses are lighted by gas, furnished at $2 per thousand feet. It is quite satisfactory as to illuminating power, and no injurious effects to health have been observed. The streets are well lighted, electric light as well as gas being used in the business portion of the city.

No precautions are taken to ascertain the grade, and there are no restrictions on the sale of burning fluids, kerosene, etc. There have been a number of accidents from explosions of these fluids within the last five years, but few serious or fatal.

Garbage and Excreta.—Garbage is disposed of by the householder at his own expense; about one-third is destroyed by fire, the remainder is removed beyond the city limits during the summer, about twice a week. This arrangement has not proved very satisfactory, as some persons have been dumping the refuse into the river or upon its banks. It is estimated that $100 will cover all expenses to citizens in the matter of such removal. The city owns a lot or plat of ground beyond the limits, to which the dead bodies of animals are removed and buried. The bodies of 15 horses and 30 dogs were so disposed of last year, and this manner of disposal has proved quite satisfactory. Ashes are used to fill holes in the streets. The kitchen and laundry waste water of 953 houses is delivered into cess-pools on the premises—these are mostly porous and not furnished with overflows, but are cleaned by the scavenger, when full. Two hundred and thirty-five houses have water-closets; 115 of these deliver into the public sewers, the rest into cess-pools. About 24 out of every 25 houses depend upon privy vaults, none of which are water tight; about 30 vaults are connected with the sewers; they are required to be dug 6 feet deep and walled, and to be cleaned when full. No wells or cisterns are known to be contaminated by privy or cess-pool drainage. The dry earth system is used to a very limited extent.

Markets and Food Supply.—The markets are established by custom, and there is no system of inspection. The supply of meats and vegetables is furnished by the surrounding country—is good and sufficient, and is brought to the city in wagons from distances varying from 1 to 15 miles. Meat is sold in private markets—vegetables, fruits, fish and salt meats are sold in grocery stores. Very few fowls are brought and sold to consumers alive. Apples are supplied from the immediate vicinity; other fruits are shipped from the South. Fruits and vegetables in small quantities have been condemned during the past year as unfit for use. There is a city ordinance prohibiting the hawking of "any goods, wares, merchandise or other property" within the city; also against selling, or offering for sale, "any flesh of any diseased animal or tainted, spoilt or unwholesome meat, flesh or provisions." No facilities, such as sheds, stands, etc., are afforded to producers, but they are allowed to, and about two-thirds of them do, sell direct to the consumer, without being subject to any tax. The milk supply is good and sufficient—the cows are fed on grass and grain. Oleomargarine is very little used, if at all. Some cases of poisoning or acute disease have been caused by unwholesome articles of food. The State laws concerning the adulteration of food, drink, candies, medicines, liquors, butter, cheese, milk and vinegar are not as strictly enforced as they should be.

SLAUGHTER HOUSES AND ABATTOIRS.—Animals for city markets are obtained from the surrounding country; they are brought to the places of slaughter, generally in wagons, and are not submitted to inspection either before or after slaughtering. The slaughter houses are small private establishments, beyond the city limits, and are not considered nuisances in their neighborhoods. The meat is cooled by hanging over night and by being placed in ice boxes. Lard is rendered at markets; fat and tallow sold to soap factories; and animal offal and refuse fed to hogs kept for that purpose. There are no regulations to protect the public from consequent nuisance. The meat of these hogs is not considered to be as good as that of corn-fed hogs. The rendering of the animal refuse is done on the day in which the animals are slaughtered.

There is a city ordinance requiring all who keep slaughter houses or yards for yarding cattle *within the city limits* to first obtain a permit from the city council.

MANUFACTORIES AND TRADES.—The manufactories of Rockford have a capital invested of over $4,500,000; employ more than 4,500 persons; their annual product amounts to over $10,000,000. There are two tanneries and a soap factory within the limits, but these will soon be removed, and there are several slaughter houses and a bone-boiling establishment in the suburbs. All connect with the river, but seem to produce no bad results. Noxious gases are exhaled from the tanneries, the paper mills and the soap factory. There are city ordinances regulating all such institutions when situated within the city limits, and requiring them to have permits from the city council.

Women are employed in the factories in large numbers. The hours of labor are from 7 A. M. to 12 M. and from 1 to 6 P. M. Some cases of constipation and nervous trouble seem due to occupation. A very few children are employed, the youngest being from 12 to 14 years of age. The employment does not appear to affect their health. The factories are well ventilated and the arrangements for privies and water closets are generally satisfactory.

HOSPITALS AND PUBLIC CHARITIES.—The Rockford Hospital Association was organized December 15, 1883, under the "Act concerning Corporations," its object and purpose being to establish and maintain in the city of Rockford, a hospital for the care and treatment of sick and disabled persons, whether in indigent circumstances or otherwise. The management and control of its property are vested in a board of trustees, fifteen in number. For the purpose of raising funds for the immediate use of the association 3,500 certificates of membership were issued to be sold at $10 each. From this source $7,130 was immediately realized and enough more from contributions and entertainments to purchase and repair suitable property; so that the hospital was opened October 1, 1885, free from debt. "The free gifts of the citizens of Rockford and vicinity are the sole source of support of this benevolent institution." The hospital accommodations are not, however, sufficient for the wants. There is no ambulance system except the police patrol. There is no city physician, and the city has no system of public charities, but its poor are taken care of by the county board of supervisors in the same manner as the rest of the county.

The county alms-house is located about four miles north of the city. It was built in 1883 at a cost of $43,345.36. It is heated by steam, is well ventilated, has good natural drainage, and is kept in good sanitary condition. There are at present 50 single and 12 double beds, while the capacity of the building is 96 beds. It is governed by a superintendent who is appointed by the county board of supervisors. The county also employs a physician for the poor at a salary of $240 per annum.

POLICE AND PRISONS.—The police force is composed of a chief and eleven assistants, appointed by the mayor at the beginning of each fiscal year; salary of chief, $1000, of assistants, $800 each. They act as inspectors in the business part of the city. The night patrol is composed of seven men. The per cent. of sick days among members of the force has not exceeded five.

There are three police stations and one lockup, in which both sexes are confined, but in separate wards. The average daily occupancy of each is three; air space per head for such average occupancy 1500 cu. feet; maximum occupancy, twenty. Dimensions of cells for single prisoners, 6x6½x5 ft. Vagrants are not kept separate from other prisoners. The lockup is ventilated through the roof; each cell is connected with the sewer; prisoners are required to break stone. There are no rules concerning the bathing of inmates, but plenty of water is furnished. There is no ambulance system and no police surgeon. Persons found insensible from injury or other causes are taken in the police patrol wagon to the city hospital. "Drunks" etc., are taken in the same wagon to the stations.

The Winnebago county jail is in the city; average occupancy, five; dimensions of cells 6x5x7 feet. The building is heated by steam from the court house. No epidemics have occurred among prisoners within the last few years. They are allowed good plain food.

There are no houses of prostitution in the city, although it is estimated that there are about 25 prostitutes. The license system has not been tried.

There are 25 places in the city where intoxicating drinks are sold to be drunk on the premises; none of these are beer-gardens. One hundred and eighty cases of drunkenness were brought before the police courts during the past year. There is a city ordinance concerning intoxicating liquors, requiring persons who sell to take out license, which is strictly enforced.

FIRE ESTABLISHMENTS, ETC.—The fire department is established by ordinance and maintained by the city at an annual cost of $11,000. There are 13 persons employed in the department, who are always on duty. The Gamewell system of fire alarm is in use and there are 25 alarm boxes to four square miles. The system thoroughly answers its purpose. There is no insurance patrol, no steam fire engines and no hand engines; one hook and ladder truck and four hose carts. The water supply for fire purposes is inexhaustable, 75,000 gallons of water from artesian wells being available, and the pumps being so arranged that in case of necessity water can be pumped direct from the river. It is distributed by the Holly system. Babcock fire extinguishers are most in favor and are in general use.

There has been only five days' sickness in three years among the firemen, only one accident to fifty alarms, and no mortality in the line of duty. There is an ambulance system in connection with the department, for conveying the sick and wounded to the hospital. No medical man is regularly employed except upon call, and he is paid only for services rendered.

There were 59 fires during the year ended December 31, 1886; 9 arose from the use of dangerous and unfit fluids for lighting purposes, 9 from carelessness, such as defective flue construction, smoking, matches, fireworks, etc., one from spontaneous combustion and none are supposed to have been incendiary. The loss of property amounted to $93,964.86, upon which an insurance of $62,510.86 was paid.

Gunpowder, nitro-glycerine, dynamite and coal oil are allowed to be kept on sale. Explosives are required to be stored outside of limits—small quantities for sale to be kept in iron boxes on the sidewalk; oils to be stored out of business centers. No measures are taken to insure complete inspection of illuminating oils.

Buildings within the fire limits are required to be constructed of brick or stone. The State law requiring doors of public buildings to open outward is not generally complied with.

CEMETERIES AND BURIAL.—There is one cemetery within and three near the city, in which interments are made—about 350 annually. The graves are dug 6 feet deep, dry at bottom; the soil is clay, sand and gravel. There is a receiving vault, which is properly managed. No nuisance or evil effect has been observed from the cemeteries, nor is it probable that the subsoil drainage from them contaminates springs, wells or water-courses. Public funerals are not allowed when persons have died of contagious diseases.

The city has adopted the following:

ORDINANCE IN RELATION TO BURIAL PERMITS.

Be it ordained by the City Council of the City of Rockford:

Section 1.—That no burial or interment shall be lawful in the City of Rockford, nor shall any dead body be removed from said city until a permit for such burial, interment or removal shall have been first obtained from the city clerk of said city.

Section 2.—That such permit shall be issued by the clerk upon his receipt of a certificate of death, signed by (1) the attending physician in the case; or, if none, by (2) one of the parents of the deceased; or, if none, by (3) the nearest of kin not a minor; or, if none, by (4) the resident householder where the death occurred; or, if none, by (5) any reputable citizen cognizant with the facts and circumstances of the death; or, if the death be the subject of an inquest, by (6) the coroner or other officer holding said inquest.

Section 3.—That any undertaker or sexton, and each and every other person engaged or concerned in a burial in violation of the provisions of this ordinance, and the officers and employes of any transportation company, or any other person or persons engaged or concerned in the removal of a dead body from said city in violation of the provisions of this ordinance, shall be subject to a fine of not less than ten (10) dollars nor more than fifty (50) dollars for each offense.

Section 4.—That the city clerk shall enter in a suitable book, to be kept for that purpose, a record of all burial permits issued, specifying the date of issue, and to whom issued, together with all the items of information contained in the certificates upon which the issue of such permits is based; and he shall forward to the county clerk of Winnebago county, at the end of each month, all of said certificates so received during the month.

Section 5.—This ordinance shall be published in the Rockford Gazette, and be in force at the expiration of ten days from and after its publication.

Approved October 18, 1886.

A. TAGGART, Mayor.

[SEAL.] Attest:
E. K. CONKLING, City Clerk.

Passed October 4, 1886.
Approved October 18, 1886.
Published October 19, 1886.

PUBLIC HEALTH LAWS, REGULATIONS AND SANITARY OFFICIALS.—A local board of health was established by ordinance May 1, 1885, "consisting of the mayor, city marshal, the chairman of the committee on health of the city council; and a health officer, who shall be a resident practicing physician, possessed of the requisite knowledge of sanitary science and preventive medicine, and shall be appointed by the mayor, by and with the advice and consent of the city council;" term of office one year; salary to be determined by the council; last year it was placed at $450. The health officer, subject to the direction of the board, is the general superintendent of all matters relating to the public health, and of the enforcement and observance of all the provisions of the ordinance. He has no regular assistants, but last year three inspectors were appointed to assist in the sanitary survey of the city.

The board meets only upon call of its president or of the health officer. Its powers and duties are specifically defined by the ordinance. It has authority, independent of the council and police, to make and enforce "such rules and regulations respecting sources of filth, causes of sickness and nuisances, and respecting the protection and preservation of the health of the inhabitants of the city as to them may appear reasonable and necessary." Also, "to resort to such measures as shall be requisite for the removal of filth and the legal abatement of nuisances."

Unless a general inspection is in progress or a complaint is made, the board does not take cognizance of defective house drainage, of defective sewers, of possible contamination of water supplies, public or private, of the condition of cess-pools or privy vaults, of the removal of garbage and the cleaning of private premises, of the condition of the streets as to cleanliness, of methods of burial, unless death has resulted from contagious disease, or of the disposition of night-soil and organic wastes.

The board has power to remove, or cause to be removed to the city hospital any person who shall fall sick within the city with any pestilential or infectious disease, * * * and who ought to be removed so as not to endanger the health of the city, which power is always exercised. Patients affected with small-pox or other pestilential, infectious or contagious diseases are isolated, and the premises quarantined when necessary. The State law concerning vaccination is strictly enforced in the schools.

The board keeps a record of the deaths occurring within the city, which is a copy of the physician's certificate of death provided by the STATE BOARD OF HEALTH, a transcript of which is returned to the county clerk once a month. The births and marriages are reported directly to the county clerk.

The board does not contribute to, or receive aid from, outside sources in any special manner.

REGISTRATION AND STATISTICS OF DEATH AND DISEASE.—No burial, interment or removal is lawful without a certificate of death properly executed and a permit granted by the city clerk upon such certificate. A local system of registration of the causes of death is in force. See section 4 of burial permit ordinance already quoted in full. This ordinance is strictly enforced, but as it has been in operation only since November 1, 1886, no statistics can be given concerning the periods or mortality of any epidemic. Cholera, small-pox, scarlet fever, diphtheria and all other contagious, infectious or pestilential diseases are required to be reported to the local board of health. Neither immigrants nor those from other parts of this country, seem to suffer from the climate.

MUNICIPAL SANITARY EXPENSES.—The total amount of money appropriated by the city for sanitary purposes for the fiscal year ended April 30, 1886, was $1,425, being for miscellaneous expenses, $625; salary of health officer, $400, and a contingent fund of $400. Only $856.89 of this appropriation was expended. For the year 1887 $1,710 was appropriated for sanitary expenses; for sewerage, $378.23, of which $170.26 was expended. For cleaning and repairing streets, $10,000; expended, $8.214.48. Construction and care of public parks, $250; all expended. Repairs of pest house, $75. Erection of high school building, $25,000, and it is estimated that about $150 was expended by private individuals for the removal of ashes and garbage.

The total municipal expenses of the city during the past year, exclusive of bonds and interest, amounted to $150,058.50.

PUBLIC SCHOOLS.*—There are in the city 12 public school buildings, in which 71 teachers are employed—12 in first grade, 12 in second, 12 in third, 11 in fourth, 8 in fifth, 5 in sixth, 3 in seventh, 3 in eighth and 5 in the high school. There are 3,368 scholars enrolled, with an average attendance of 2,546.

Pupils in the first grade are confined in the room 4 hours; in second grade, 5 hours, and to their seats without change 15 or 20 minutes. Scholars in these grades are usually under 8 years of age. Experience is in favor of "two sessions for young pupils, but one session for older." The younger scholars usually stand during recitation; the older ones sit. A few scholars study outside of school hours.

Each school day one hour is devoted to out-door exercise; there is one holiday in each week; one week vacation at Christmas, one week in April, and the two months of July and August. All scholars are required to leave the school-room at recess and during the noon hour. Competition is not a feature in the system of instruction; no prizes are offered for scholarship or deportment. The sexes study and recite together in every department of the schools, the girls seem to stand the work as well as the boys. The method of correction or punishment used is moral suasion, and when necessary, corporal punishment, to a limited extent.

All children are required to be vaccinated before being admitted to public schools; this rule was instituted in 1882, and has been enforced ever since. No case of small-pox has occurred among the scholars or teachers since vaccination was made a condition of admission. No child is allowed to enter school who lives in a house in which there is any contagious disease, excepting whooping-cough. Twenty per cent. of the absences of pupils is due to sickness; this is shown by the "excuses" furnished by parents. Short sight is quite prevalent among school children, due probably to the poorly lighted school rooms, and a gradual increase of the disease is noticeable, also a tendency among scholars to curvature of spine as they advance from one grade to another.

---

*Information furnished by P. R. WALKER, Superintendent of Schools.

The experience of Rockford seems to demonstrate the advisability, from a sanitary point of view, of a limited number of scholars (not to exceed 600) in any one school, and of school buildings not over two-stories high.

The water supply is from the artesian wells and is good and abundant. The privy vaults are kept well disinfected during the school days in warm weather. A barrel containing 80 pounds of copperas has been placed in each school yard. This is filled with water and allowed to stand about three days, when the solution is put into the vaults and the barrel again filled with water. This is done twice a week, and has proved quite satisfactory. Large tin funnels are used in putting the solution into the vaults, simply for the sake of cleanliness.

The Adams school building,* at the corner of First avenue and Fifth street, was erected in 1856, at a cost of $38,000. It is built of stone, has 3 stories each 12 feet 10 inches high, and a basement, and contains 6 class-rooms, besides 6 school rooms 36 feet square, each with a seating capacity of 70 pupils. It is heated by furnaces, which consume about 50 tons of coal annually; an average temperature of from 65 to 70 degrees is maintained in winter. No sickness has been traced to variations or extremes of temperature. In winter the rooms are ventilated by the cold-air shaft and by boards under windows; in summer, by shaft and open windows. This method is by no means satisfactory. The basement is used for storing fuel and the furnaces are also in basement. It is ventilated separately from the rest of the building. The rooms are not sufficiently light—the number of square feet of surface through which light passes into each school-room by windows, being but 68 4-9 square feet—into each class-room 51 1-3 square feet. Pupils at recitations must sit from 10 to 20 feet from the black-board, map or chart, on which they are expected to read letters or figures.

There are no places where pupils may exercise, sheltered from cold, heat or wet; but opportunities are afforded for drying clothes when wet coming to school. The play-grounds contain about an acre and a quarter of level land; a sandy loam with a gravelly subsoil and good natural drainage. They are surrounded by dwellings, and are kept clean and otherwise in good condition. There are several large shade trees. There is no gymnastic or calesthenic apparatus.

One-half of the seats and desks in the school are of Andrews' make; these are new and give good satisfaction; the rest were bought thirty years ago, and are not satisfactory.

The Blake school,† at the corner of Chestnut and Court streets is a two-story building, containing four rooms, each with a seating capacity of 40; ceilings 12 feet high. The building is heated by a furnace which consumes 15 tons of coal annually. The rooms are kept at an average temperature of 70 degrees. The building is ventilated by the windows, transoms and a ventilator. The basement is used for storing fuel, and is ventilated separately from the rest of the building.

---

*Data furnished by Mrs. L. M. Gauss, Principal.

†Data furnished by Miss Belle G. King, Principal.

The rooms are well lighted, each with 78 square feet of windows. No places are provided where children may exercise sheltered from the heat, cold or wet, and there are no opportunities for drying clothes when wet coming to school.

The Ellis school,* built in 1868, is a two story brick building containing 4 rooms, each 20x26 feet with 12 foot ceilings. It is situated at the corner of Stanley and West State streets. Heated by a furnace; there is also a stove in one room. About 20 tons of coal are used annually. The temperature is kept as near 70 deg. as possible. The rooms are ventilated by window-boards and transoms, but this is not very satisfactory. Basement used for storing fuel; ventilated separately from rest of building. Rooms sufficiently light, there being 72 square feet of window lights in each.

Pupils at recitations are from 20 to 26 feet from the blackboard, map or chart on which they are expected to read letters or figures. The play-ground is 132 by 134 feet, good slope, clayey loam, and is kept in good condition. There are no opportunities for pupils to exercise, sheltered from cold, heat or wet, and none for drying clothes when wet coming to school. The desks and seats were manufactured by the Union School Furniture Co., and are satisfactory.

The Hall school† is situated at the corner of North Third and Prairie streets. It is a two story building, partly of brick and partly of wood, having eight school rooms, each with a capacity of from 40 to 45 seats. The grounds are large, well drained and well kept; the soil is clay.

The building is heated by stoves, the mean temperature of the rooms being 69 degs. From 25 to 30 tons of coal are required annually to heat the building. The rooms are ventilated in winter by boards placed under the windows; in summer by open doors and windows. This method of ventilation is quite unsatisfactory. The basement is used for storing fuel, etc., and is ventilated separately from the rest of the building.

The school rooms are sufficiently light, there being 75 square feet of surface through which light passes into each one by the windows. In the lower grades, scholars stand at a distance of but 5 or 6 feet from the blackboard, map or chart, on which they are expected to read letters or figures; in the higher grades they stand on the opposite side of room.

---

*Data furnished by Mrs. Isabella M. Hunter, Principal.

†Data furnished by Miss Mary G. McPherson, Principal.

There are no opportunities for pupils to exercise, sheltered from cold, heat or wet; and none for drying clothes when wet coming to school. Andrews' seats and desks are used in the school and are, for the most part, satisfactory.

The Haskell school,* corner Maple and George streets, erected in 1874, is a two-story brick building, containing 4 rooms, each 23x35 feet with 13-foot ceilings. It is heated by stoves and kept at an average temperature of about 60 or 65 degs; 20 tons of coal are used annually. Ventilated by windows, which is not satisfactory. The basement is used for storing fuel, and is ventilated separately from the rest of the building.

The rooms are well lighted, there being 116 square feet of window lights in each. Pupils at recitation are expected to read figures or letters on blackboards, maps or charts from any part of the room.

There are no opportunities for pupils to exercise sheltered from the cold, heat or wet, and no opportunities for drying clothes when wet coming to school, except by standing near the stove. The seats and desks used are of various patterns and are not satisfactory.

The Kent school,† at the corner of Kent and Winnebago streets, is a two-story stone building and contains eight school rooms and one class-room. The front of the building, containing four rooms, 21½x34 feet, was built in 1867; four other rooms, measuring 26x31½ feet each, were added in 1874. The total cost of the building was about $22,000. It has a seating capacity for 411 pupils, an average of a little more than 50 to a room.

It is heated by stoves and a furnace, using about 40 tons of anthracite coal annually. The rooms are kept at a temperature of about 65 deg. They are ventilated into the smoke stack and by the windows, but this method of ventilation is not satisfactory. The basement is ventilated separately from the rest of the building and is used for storing fuel.

The school-rooms are sufficiently light. In the lower story light passes into each room by the windows through 77 square feet of surface and in the upper story through 69 square feet. Most classes recite from their seats, so that the distances of pupils at recitation from the blackboards, maps or charts, on which they are expected to read letters or figures, vary from 6 to 30 feet.

The playground measures 160x200 feet; it is high clay land with good natural drainage, and is well kept. There are no opportunities for pupils to exercise sheltered from cold, heat or wet, and none for drying clothes when wet coming to school. Two rooms are furnished with good single desks, manufactured by the Union School Furnishing Company; the others have old double desks of various makes which do not give very good satisfaction.

---

*Data furnished by Miss Anna Connaughy, Principal.

†Data furnished by O. F. Barbour, Principal.

The Kishwaukee school* is a two-story brick building, with four school-rooms, each 20x28 feet, with 12-foot ceilings. It was erected in 1868. It is heated by a furnace, and an average temperature of from 68 to 72 deg. is maintained; 20 tons of coal are required annually. The rooms are ventilated by window boards and by opening the windows and transoms, but this is not satisfactory. The basement is ventilated separately from the rest of the building, and is used for storing fuel.

The school-rooms are well lighted, there being 70 square feet of glass through which light passes into each room. Pupils usually stand on opposite side of room from the blackboard, map or chart on which they are expected to read letters or figures.

The playgrounds are graded and graveled; they are naturally well drained, and contain a number of shade trees. There is no gymnastic or calisthenic apparatus; no opportunities for pupils to exercise sheltered from the cold, heat or wet, and none for drying clothes when wet coming to school. The desks and seats in use are old and unsatisfactory.

The Lincoln school† at the corner of North and Court streets, is a three-story building, of stone, erected in 1856. Its value in 1877 was estimated at $28,000. It is heated by hot air furnaces, 50 tons of coal and two cords of wood being required annually. The mean temperature of the rooms when school is opened is 70 deg., and half an hour before closing in the cold season, about 67 or 68 deg.

There are six school rooms 29x33 feet, and four class rooms; height of ceiling 12 feet 8 inches. The rooms are ventilated by the windows, doors and so-called ventilators, which are quite unsatisfactory. The basement is divided into several apartments, two of which are heated. One of these is used by the janitor as a work room, and one as a lunch room for those pupils who live at a distance from school; the other apartments are used for storing fuel, etc. It is ventilated separately from the rest of the building.

The school-rooms are not sufficiently light, there being in the lower stories but 48 square feet of window surface through which light passes into each room, and in the upper story but 46 square feet. The distances of pupils from the blackboards, maps or charts, on which they are expected to read letters or figures, vary from three to 30 feet.

The girls play-ground is 93x87 feet; the boys 217x20. There are no gymnastic or calisthenic apparatus, no opportunities for pupils to exercise, sheltered from the cold, heat or wet, and none for drying clothes when wet coming to school. The rooms in the upper story are fitted with single desks with folding seats, which are quite satisfactory. Those in first and second stories, with double desks and chairs, and these do not give satisfaction.

---

*Data furnished by Miss MATILDA J. NYGREN, Principal.

†Data furnished by Miss BLANCHE GOODALL, Principal.

The Marsh school,* at the corner of Second Avenue and Eighth street, is a two-story brick building with four rooms, each 20x26 feet, and 12-foot ceilings. There are seats to accommodate 50 scholars in each room, and about that many are enrolled, but the average daily attendance for each room for 1886 was 38.4. The building is heated by a furnace, and a temperature of about 69 deg. is maintained; ten tons of coal are used annually. The school-rooms are ventilated in winter by means of window boards and transoms, in the summer by doors and windows. This is not satisfactory. The basement is used for storing fuel, and is ventilated separately from the rest of the building. The water supply is from a well and is good and abundant.

The rooms are well lighted, there being 78 square feet of window glass in each. In the lower grades pupils stand only from 4 to 6 feet from the blackboards, maps or charts on which they are expected to read letters or figures; in the higher grades they stand across the room.

The play-grounds have an area of 2,266⅔ square yards; they have a sandy soil and a good natural drainage. There are no gymnastic or calisthenic apparatus; no opportunities for pupils to exercise sheltered from the heat, cold or wet, and none for drying clothes when wet coming to school. Andrews' desks and seats are used. The single desks are preferred.

The Montague school† was erected in 1883 at a cost of $8,400. It is two stories high, built of brick, and contains four school rooms, each 24½x31 feet, and one class-room. There was an average daily attendance during the last school year of 163.7, being about 41 to each room. The building is heated by a furnace, temperature averages about 65°; about 25 tons of anthracite coal are used annually. The rooms are ventilated by the windows and into the smoke-stack. Ventilation satisfactory. The basement is ventilated separately from the rest of the building and is used for storing fuel, etc.

The school-rooms are well lighted; there are 70 square feet of glass through which light passes into each. Most classes recite from their seats, so that the distances of pupils at recitations from the blackboards, maps or charts on which they are expected to read letters or figures vary from 7 to 28 feet.

The play-grounds contain a little over 861 square yards, exclusive of the space occupied by the building; it is high clay ground with good natural drainage. There are no opportunities for pupils to exercise sheltered from the cold, heat or wet, and none for drying clothes when wet coming to school. No calisthenic or gymnastic apparatus. The desks and seats were made by the Union School Furnishing Company and are quite satisfactory.

---

*Data furnished by Miss Emma Coy, Principal.

†Data furnished by Miss Elpha G. Moffatt, Principal.

The Nelson school[*] situated at the corner of Tenth avenue and Ninth street, is a two-story brick building containing 4 rooms, erected in 1882, at a cost of $10,000. The total number of scholars enrolled is 150; the average daily attendance during past year was 109.3 or 27.3 to each room. The rooms are heated by stoves. About 20 tons of anthracite coal are used annually, and a mean temperature of about 68 degrees is maintained during the cold season. The rooms are ventilated by window boards, but this method is quite unsatisfactory. The basement is used for storing fuel.

The school-rooms are well lighted; there are 75 square feet of windows through which light passes into each room. Pupils at recitations are at distances ranging from 5 to 20 feet from the boards, maps or charts on which they are expected to read letters or figures.

There are no opportunities for pupils to exercise sheltered from heat, cold or wet except in the school-rooms and halls, and no special arrangements for drying clothes when wet coming to school. There is no gymnastic or calisthenic apparatus. Andrews' seats and desks are used. They are not perfectly satisfactory.

The new High School[†] building was completed and dedicated March 17, 1886. It has a frontage of 81 feet 8 inches and is 88 feet 8 inches long. There are in the basement three furnace and fuel rooms, three store rooms, a laboratory measuring 25x26 feet, and a recreation room of the same size, where pupils may exercise sheltered from the cold, heat or wet, besides a passage 8x45 feet and a hall 16 feet 4 inches by about 60 feet. The first floor contains two school rooms, 32 feet 8 inches by 26 feet 8 inches, one 34 feet 4 inches by 27 feet 2 inches, a reception room 18x20 feet, superintendent's office 13x18 feet, a museum 34 feet 4 inches by 11 feet, a library 34 feet 4 inches by 10 feet, besides an apparatus room, three wardrobes and two halls. The second floor has two school rooms 32 feet 8 inches by 26 feet 8 inches, an assembly room 60 feet 6 inches by 41 feet 6 inches, two recitation rooms, one 18x23 feet, the other 17x18 feet, and four wardrobes.

The building is admirably adapted to the wants of both teachers and pupils; is well lighted, well heated and well ventilated. The following extract is from the architect's report:

> The building fronts east and the ground slopes back towards Rock river, so that the basement rooms in the rear are on a level with the yard. * * * The heights of the various stories are as follows: Basement, 10 feet; first story, 14 feet; and second story, 15 feet. The exterior walls to the level of the first floor joists are of stone, and from that point the balance of the walls, including all hall walls, are constructed of brick. The exterior of the building is laid with a fine quality of pressed brick in red mortar, relieved by ornamental brick and terra cotta panels. The roof is shingled, and the shingles were all dipped in paint before they were laid. The interior of the building is finished in clear pine in the natural wood, with shellac and oil finish. The floors above the basement are deafened, and each floor above the deafening is double. Each school

---

[*] Data furnished by Mrs. Mary W. Rice, Principal.

[†] Data furnished by Charles A. Smith, Principal.

room is wainscoted to the height of the window sills, and all halls are wainscoted five feet high. * * * There are few steps from the ground to the entrance floors. The architect considers many steps an objection, both on account of the cost and also danger in the winter when they are covered with snow and ice. Again, all the steps are on the inside, so they can be easily kept clean. The treads of the stairs are of hard wood, and the rails of the stairs going to the various stories are high, as a protection for the scholars.

All windows in the first and second stories are covered with inside shutters over the clear glass, and nearly all the windows have at the top fine cathedral glass, making a pleasant light in the school rooms. Over each school room door connecting with the hall, is a transom arranged so that the air entering the school rooms rises toward the ceiling and becomes warm before it comes in contact with the pupils. In the doors below these transoms, in the upper panels of same, is polished plate glass, so that the principal or superintendent of schools can observe the work going on in the rooms without disturbing the schools.

In each school room, built in the wall back of the teacher, is a book-case with glass doors. Above this book-case is a molded strip, so that maps can be attached, and around each room are picture-molds. On top of the wainscoting are the chalk-troughs, and to the height of four feet above these chalk-troughs, on all sides of school, assembly and recitation rooms, are blackboards. Back of each teacher are speaking-tubes to the superintendent's office, and from the superintendent's office are speaking-tubes to the various rooms, such as museum, library, etc.

* * * The teacher for each school room can stand in the hall and look into the school room or wardrobe from the same position.

One point that has been specially studied is to have the teachers' platforms so that the light is at the left and back of the pupils in each school room.

In the arrangement of the plumbing of this building extreme care has been exercised, so by means of traps and vent-pipes there is not the slightest danger from sewer-gas. The sinks in the laboratory and apparatus room are burned together—no solder allowed—so that they can be used for various acids. Washbowls are placed in the center of the halls, so that water for drinking purposes can be easily obtained. On the exterior of the building, close to the entrance doors, are hydrants.

In the apparatus room and library are large cases for books and specimens, also in the reception rooms; in the closets are a number of shelves. On one side of the reception room is a blackboard. There is a sliding door connecting the school room and apparatus room in the first story, so that a table with all apparatus necessary can be arranged for experiments in the apparatus room and moved before the class in the school room. In each wardrobe is a closet for the teachers.

Heating and Ventilation.—Special study has been made in the arrangement of these plans to thoroughly heat and ventilate this building. Each school room and a number of the other rooms have fire-places to be used as ventilators when the furnaces are not in operation, and in addition to these fire-places, under each window in each room is a perforated base, allowing all the foul air in the room and the cold air that may descend from the windows, to be drawn under the floor to the foul air chamber, thus drawing the cold air away from the pupils' feet. The floors are constructed with air spaces under them, by nailing strips across the top of the joists, allowing the free circulation of air in any direction. To draw the air from the school room and to the foul air chamber, a large heating-flue is built in the center of each large chimney, connected with the smoke-pipes of all the furnaces, and this heated flue causes the air in the foul air flues in either side to ascend rapidly.

The heating of the building is accomplished by four large furnaces. The reason that large furnaces are used, is so that a large amount of fresh air can be brought into contact with the warm furnace-pipes (not hot furnace-pipes), thereby having warm fresh air, instead of burned hot air. The fresh air is brought to the furnaces by connecting the same with an entire cellar window. The sash for these windows are hung by means of hinges, so that a large or small amount of air can be admitted, as required. This system of heating and ventilation has been placed in a number of school houses built from plans made by the architect, and in every case has proven satisfactory. The cost of the building as described is $30,000.

Sanitary Survey of Rock Island.

By G. G. Craig, M. D., Commissioner of Health *

Location, Population and Climate.—The city of Rock Island is situated in latitude 41 deg. 30 min. north, longitude 90 deg. 37 min. west, on the east bank of the Mississippi river, distant about 181 miles west from Chicago. It was founded in 1836 and first incorporated in 1849. The population in 1870 was 7,990; in 1880, 11,661, and in 1887, estimated at 12,546. Of the latter number about 1,500 are under 5 years of age. No meteorological observations have been recorded in the city.

---

*Dr. Craig desires to express his thanks to Prof J. H. Southwell for his report on artesian wells embodied in the following. Also to Surveyor C. H. Stoddard, for a map of the city and vicinity and many points throughout the report.

TOPOGRAPHY.—The surrounding country to the southeast is hilly, to the southwest low and marshy, and on the northwest is the Mississippi river. The Mississippi bluffs within and southeast of the city are 165 feet above low water in the river, and 735 feet above sea level. A strip of low, marshy land about 500 feet wide, extends from the center, southwest through the city, and about one mile beyond to Rock river. In times of high water this land is covered to a depth of from 6 to 14 feet. Its altitude above sea level is 565 feet. This low land was long suspected of being the cause of much malaria, and since the main sewer was built draining this slough, malaria has ceased to exist. No other influences upon health have been observed as apparently due to the topographical features of immediate vicinity.

The city is bordered on the south by forests, grass lands and gardens. That portion of the city built upon is level, and is about 600 feet above sea level. Other portions are, respectively, 735 and 565 feet above sea level. The original conformation of the site of the city has not been changed nor have original water courses in the vicinity been diverted, covered or modified. The general surface slope of the city is north and west. With the exception of a portion of the swamp land described being filled, there is no made land in the city. The character of the ground before filling was black muck. It was not drained before filling, but was filled to the depth of from 1 to 4 feet, in some parts entirely with clay, in others partly with the refuse of saw mills covered with clay. Very little of this "made land" is built upon, and that with cheap frame houses.

The Mississippi river borders the city on the northwest and is about one-half mile wide. Its depth at low water is 12 feet, in high water 30 feet; velocity, gentle. From low to high water mark there is about 100 feet of sloping beach. The exposed shore is hard ground and rock. The river water is clean except in times of heavy rains. The bed of the river and shores are not subject to deposits of organic matter or silt. In the stream about 500 feet from the shore at low water is an exposed shoal or flat of about an acre in extent. Between it and the shore, however, is a navigable channel. A dam for water power purposes is at the northeast corner of the city; height of fall of water about 8 feet. It is built across what is called the Rock Island rapids of the Mississippi river, which are about 18 miles long and in which the current is quite rapid. No canal or race passes through or near the city. The drainage and sewage of the city enters the Mississippi river below its limits, but that of Moline and Davenport above. There are no other bodies or streams of water near other than the ponds heretofore described in connection with the strip of low land. The water in these ponds is stagnant nearly all the time and in hot weather emits a bad odor. This low land generally overflows in May and June, but not every year. A portion of it is protected by a levee. With the exception of the northwest part of the city where there is much gravel the water in wells is not affected from overflow or rain. In the section mentioned it falls and rises with the river.

The site and vicinity belong to the Devonian period. The surface rocks are Hamilton and carboniferous limestone. The underlying strata in order of succession from above downward are Guelph Niagara, Hudson river, Trenton, St. Peters, calciferous, Potsdam, Granite. Their relative permeability is:

St. Peters	100
Guelph Niagara	90
Potsdam	60
Calciferous	40
Hudson river	30
Trenton	15
Granite	0

The dip of the strata is slightly to the southeast; strike northwest. The character of the surface soil is yellow and black clay, gravelly, and sandy loam. No special observations have been noted as to malarial effects when the surface soil is disturbed, other than when the main sewer was built malaria prevailed, but as it was prevalent elsewhere at the same time it was considered merely as a coincidence. There are continuous fissures in the rocks through which soil water may flow. Malarial and typhoid fevers are believed to be due to the soil and the geological formation. No epidemic has spread and followed the direction of the flow of underground water.

Water Supply.—The source of the chief water supply is the main channel of the Mississippi river, and the mode of distribution is by the Holly system of pumping works. The following towns and villages are located on the river above the point where the water is taken and are more or less sources of contamination, viz.: Moline, three miles; Hampton, 10 miles; Port Byron and LeClaire, 18 miles; Clinton and Fulton, about 40 miles. The immediate gathering ground from which the water is drained is not manured with night-soil, but to some extent with ordinary farm manure. The water is brought a distance of one-half mile in an iron pipe 18 inches in diameter. One settling basin 30 feet in diameter and seven feet below low-water-mark is in use at the pumping works. No other process of filtering or purification is used. The capacity of the pumping works per diem is 1,666,470 gallons, being an average of 133 gallons per inhabitant. The water supply has never been offensive in taste or odor, The city is supplied with one public fountain and 138 fire plugs. There are no artesian wells.

About two-fifths of the population use cistern, spring or well water. The character of the soil where wells are used is sand, gravel, clay and rock. Usual depth of wells to bottom is 20 feet, to surface of water 10 to 15 feet. Some wells are so located and constructed as to subject them to contamination from privies, first on account of their proximity; and, second, both being in the rock there is probability of contamination through fissures and crevices. Typhoid fever and typho-malarial fevers have been attributed to the use of well water. No diseases have arisen in the city from the use of lead pipes. There are no public baths.

An analysis of Mississippi river water, made under the supervision of the National Board of Health, by Prof. J. W. Mallett, of the University of Virginia, gave the following results:

Clearness or turbidity in 2-foot tube: Slightly turbid.

Color in 2-foot tube: Greenish yellow.

Odor: None.

Total solids: 140.

Loss on ignition: 95.

Phenomena of ignition: Very black in spots and wavy concentric lines, disappearing with difficulty; no fumes; odor slight.

Chlorine: 1.0.

Combustion process: Organic carbon, 7.79; organic nitrogen, 0.52. Sum of organic C. and N. 8.31; ratio, 15:1.

Albuminoid-ammonia process: Free ammonia, 0.025; nitrogen of free ammonia, 0.021; albuminoid ammonia, 0.26; nitrogen of albuminoid ammonia, 0.214.

Nitrogen of nitrites: None.

Nitrogen of nitrates: A trace.

Total inorganic nitrogen: 0.021.

Previous sewage contamination: None.

Total combined nitrogen: 0.541.

Reaction with tannin: None.

Permanganate process: Oxygen consumed (Tidy method) in 1 liter, 3.340; in 3 liters, 4.188. Oxygen in 1 liter as per centage on oxygen in 3 liters, 80. Oxygen consumed (Kubel method 6,000.

Dissolved gases--by volume, cc. per liter: Carbonic dioxide, 4.01; oxygen, 5.22; nitrogen, 11.94. Total, 21.17. O. as per centage on O. and N., 29.65.

Dissolved gasses—by weight: Carbonic dioxide, 7.90: oxygen, 7.46: nitrogen, 15.01. Total, 30.37.

Temperature of room: 19 deg. centigrade.

Microscopical examination: Slight deposit; very few organisms; here and there a unicellular algæ or diatom; a very few micrococci.

Culture experiments: Considerable multiplication of micrococci.

Effects of infection of water concentrated at low temperature during life of animal: Injection caused no fever or other disturbance.

CLASSIFICATION OF WATER ON BASIS OF ABOVE RESULTS.

Combustion process: Impure; organic matter, probably of vegetable origin.

Albuminoid-ammonia process: Bad, from vegetable matter; as a rainwater from a foul roof and cistern. (The distillate for free N. H. 3 became hazy after a few minutes; the color with Nessler reagent greenish and not exactly comparable with standard.)

Permanganate process: Impure.

Biological examination: Harmless.

The following detailed information concerning artesian wells is furnished by Prof. J. H. Southwell, superintendent of schools, Rock Island county, in reply, particularly to inquiries upon the depth necessary to bore, and the flow, quantity and quality of water that, in the light of what is at present known which has a bearing upon the matter, may be expected in an artesian boring at Rock Island:

> The geological conditions which are necessary to produce an artesian well are as follows:
>
> First—There must be an impervious stratum to prevent the escape of water below.
>
> Second—A pervious water-bearing stratum upon this to furnish the water.
>
> Third—A second impervious layer upon the last mentioned to prevent the escape of water above, being under pressure from the fountain-head.

Fourth—These must dip and there must be no outlet at a lower level than the well that will materially effect the rise of water in the boring.

Fifth—In connection with each of the porous strata having the requisite impervious cover and floor, there must also be a sufficiently large collecting area at an altitude great enough to allow it to act as a fountain-head to produce a flowing well. This altitude, must, of course, be equal to the altitude of surface at well, plus height to which water will flow at such well, and plus also the number of feet of head lost by the friction of the water in making its way through a sandstone or other porous formation, and by leakage through fissures the head, in a given case, will also be somewhat reduced by the supply being heavily drawn upon by numerous borings within a limited area, as at Chicago.

Under the conditions mentioned above, wells in the Mississippi Valley may be placed in the following classes:

1. From drift gravel between clay beds.
2. From gravel between drift clay and indurated rocks below.
3. Those where water is supplied through fissures in the Niagara limestone.
4. Those from fissures in the Trenton limestone.
5. From the St. Peter's sandstone.
6. From one or more of the several water-bearing horizons in the Potsdam sandstone.

Conditions of these formations vary locally, and other circumstances having a bearing upon results from wells also may vary with locality, and business principles would suggest it to be profitable that some expert knowledge be utilized in the matter, before undertaking a large investment which by the various circumstances of locality may be useless, so far as obtaining anything more than a deep hole in the ground.

In our locality no results can be obtained except from No. 5 or 6, preferably from the St. Peter's, as it here furnishes an abundance of water, and can be reached in 850 feet, as shown in the well of the Hon. S. W. Wheelock, Moline. The Moline well is carried below the St. Peter's sandstone, but does not reach the Potsdam sand, and about all the water that flows therefrom comes from the St. Peter's. This well is not cased, and there is a leakage in the fissures of the Niagara limestone. This leakage is shown in this way: Some time before sinking this well a boring was put down which ended in this formation but did not flow, but when flowing water was struck in the deep well, the first well also began to flow. If it were not for this waste (which could be remedied by casing if necessary), the water would rise in the stand-pipe about 100 feet above the surface. It will now rise to a height of 82 feet, and the quantity is a flow of 30,000 gallons per hour. The water has been analyzed by Prof. Walter Haines, of Rush Medical College, Chicago.

Appended is a copy of the analysis. The quantity of each constituent is represented in grains per standard gallon of 231 cubic inches:

Chloride of sodium	27,854
Sulphate of sodium	20,848
Carbonate of calcium	8,765
Carbonate of magnesium	5,849
Carbonate of iron	221
Silica	355
Total	63,892

This gives a trifle less than 8 grains per pint, with a hardness of 11½ degrees on Clark's soap scale.

As this well is but four miles from our locality, with conditions of altitude, etc., precisely similar, like results may be expected from a well at Rock Island.

DRAINAGE AND SEWERAGE.—The area included within the city limits is about four and one-fourth square miles, one square mile of which is closely built up. The surface drainage is good with the exception of the swampy land heretofore described. No underground drains have been constructed to act exclusively as such. Cellars in part of the city are liable to overflow in heavy rains and to intrusion of soil water.

No system of sewerage has been adopted. There are four outlet sewers, discharging into the Mississippi river. The diameter of the main sewer at its mouth is six feet; of the others about four feet. They are constructed of brick and stone, the main sewer being tightly cemented. It is oval and round while the others are square. The main sewer retains deposits and is cleaned by hand through man-holes. The fall of this sewer is only one foot in 1,000 feet. The other three sewers are cleaned by hand and by flushing. About nineteen-twentieths of the city's area is not sewered, and about one-fourth of this is built upon. The total length of the subsidiary sewers discharging into the outlet sewers is about one and one-half miles. These are, as a rule, constructed of round tile from six inches to one foot in diameter. Surface drainage passes into the main sewer, and its capacity has proved sufficient in heavy storms. No attempt has been made to utilize sewage. Sewers are ventilated through man-holes. There are no municipal regulations concerning the drains connecting houses with sewers and no trap is required in the course of the connecting drain. House drainage is not required to be conveyed to sewers. It is kept in barrels and boxes, and removed by the city garbage wagons, also in vaults and cess-pools, cleaned by the city scavenger, at the expense of the owner. Slight odors are perceptible from sewer openings, but not materially so from those in the middle of the street.

STREETS, ALLEYS AND PUBLIC GROUNDS.—The general width of the roadway of the streets is from 20 to 40 feet, and of the sidewalks 10 to 14 feet. The latter are paved with stone, brick, wood and ashes. No difference has been noted as to healthfulness or comfort of streets owing to direction. Total length of streets in the city about 40 miles; none paved. Soil is sandy loam, rock, gravel and swamp. With the exception of the swampy portion the streets do not become unduly wet in the spring of the year. Some of the roadways are macadamized, some top-dressed with ashes and cinders, but there are no under-drains. There are probably six or seven miles of macadam and gravelled roadway; the rest are of the native soil. The city attends to keeping the streets clean, while individuals arrange for the watering. Results as to cleanliness are satisfactory.

Shade trees, generally maple or elm, are planted between the sidewalk and roadway. Gas does not seem to injure them. No perceptible effect upon health has been observed as attributable to the trees. They are cared for by individual property owners. In some instances a strip of grass is kept between the sidewalk and roadway.

The general width of the alleys is 20 feet. Municipal regulations require all ashes, manure, garbage, etc., to be kept in receptacles; these are emptied and cleaned by the city in a satisfactory manner.

There are two public parks belonging to the city, their dimensions being 230x320 and 300x320 feet, respectively; both within the city limits. These parks are the only open squares in the city. They are kept in a fair condition. There are no fountains or urinals in the parks, and other than band stands for music, no areas for or sources of amusement are provided therein. There are no regulations or ordinances relating to the cars and management of the parks.

No precautions are taken at railroad crossings within the city for the protection of life. No accidents are reported as having occurred last year on street railroads.

Habitations.—There are about 2,400 dwelling houses in the city, three-fourths of which are inhabited by owners. The average occupancy of each dwelling is about six. There are some eighty tenement houses occupied by two or more families. There are probably thirty houses in the city overtenanted. There are no municipal regulations concerning over-occupancy. Within the city limits is a territory called "fire limits," within which regulations prescribe the material and manner in which buildings shall be constructed. These regulations are enforced. No houses were condemned last year as unsafe or unfit for habitation for sanitary reasons.

About one-tenth of the dwelling houses have connection with the sewers, and of these about one-fourth are connected by tight drains with suitable traps. About one-fourth of the houses have cisterns or wells in basement or cellar. It is not known that any have privies in basement.

Three-fourths of the dwellings are isolated buildings with yard space all around them. It is not known that special arrangements for ventilation have been made in any of them. There are perhaps fifty small houses that have neither basement nor cellars, and are not properly raised from the ground to allow of sub-ventilation. The occupants, however, do not seem to suffer as much as those in dwellings having unventilated cellars.

Probably one-half of the cellars are damp and insufficiently drained. About one habitation in forty is furnished with proper bathing facilities. Some families use cellars for storing coal and for deposit of ashes, sweepings, etc. Cerebro-spinal fever and diphtheria have been attributed to overcrowding, unfitness of dwellings and bad condition of cellars. The fuel used is not believed to have any influence upon health. Ground under basement floors is not usually cemented. Height of buildings in comparison with the width of streets is from one-third to one-fourth. No ill-effects have been observed from arsenic paper in sleeping and living rooms, nor from any wall paper or dyed wearing apparel.

Gas and Lighting.—The city is lighted by gas, the works being located near the river in the heart of the city. There have been no complaints as to their being a nuisance in the neighborhood. The lime process of purification is used and is entirely satisfactory. Refuse from the works is conducted into the river. Gas is furnished at $3.00 per thousand cubic feet. The quality, as to illuminating power, odor, etc., is generally satisfactory. No injurious effects to health have been observed from it. No analyses or tests of it have been made. The streets of the city are all lighted by electricity; alleys are not lighted. Only about one-fourth of the dwelling houses are lighted by gas.

No precautions are taken to ascertain grade and no restrictions exist upon the sale of burning fluids, kerosene, etc. No record of accidents from explosions of these fluids has been kept, but an average of probably two annually has occurred for the last five years. No accidents from explosions of gas have occurred in this time.

The electric light is used entirely for the streets and very generally in business houses. The systems in use are the Brush, United States and Van Depoele. No ill effects upon health or eyesight have been noted from its use.

Garbage and Excreta.—Sanitary regulations require garbage to be kept in tight barrels and removed daily by the city. This regulation is fully complied with. Kitchen refuse is required to be removed in covered vessels. All garbage, ashes, etc., are removed by corporation employés at the expense of the corporation. Garbage is taken to a dump boat, ashes to various places for filling and grading. Garbage is removed three times a week and is ultimately dumped into the Mississippi river, the manner of disposal being satisfactory. No nuisance or damage to health results from infrequent removals. The cost to the corporation for such removal last fiscal year was $700. Perhaps 2 per cent. of the garbage is burned. Dead animals are taken to a fertilizer manufactory outside of the city and are disposed of in a satisfactory manner.

In about 6 per cent. of the houses the kitchen and laundry waste water is delivered into cess-pools on the premises. These cess-pools are all porous and are not furnished with overflows. The flush tank system is now used in all new buildings and is being placed in many old ones. Very few absorption drains under the surface of the soil are used. Regulations require cess-pools to be tight and contents not to rise higher than within two feet of the top. About 2 per cent. of the houses have water closets, all delivering directly into the sewer, none to cess-pools. All other houses depend wholly upon privy vaults. Of the latter probably 1 in 500 is water-tight. Regulations require them all to be water-tight, but this is not enforced. About 1 per cent. of privy vaults are connected with sewers. No investigation as to contamination of wells and cisterns by privy or cess-pool drainage has been made. About 1 family in 500 use the dry earth system.

Markets and Food Supply.—There are no markets established by law. Meat markets and grocery stores are under no special supervision and do about as they please. The city employs one inspector of meat at a salary of $50 per month. The supply of fresh meat is abundant but quality only medium. The inspection of meat was but recently commenced, since which time one hog was condemned. It was sick and died the next day. Meats and vegetables are brought to market a distance of from one to twenty miles, on foot and in wagons. About one-half the fowls brought to market are sold to consumers alive.

Of vegetables and fruits an adequate supply is had and of good quality. All of the first named and about one-half of the latter are derived from immediate vicinity. None have been condemned during past year. A license is required of hucksters, peddlers, etc. Fruits and vegetables are allowed to be offered for sale without regard to quality, as no inspector is employed to enforce ordinances. No facilities are afforded producers as sheds, stands, etc. Producers of vegetables can, and most of them do, sell direct to consumers.

The milk supply is derived from dairies in and near the city. Some cows are fed upon glucose refuse and malt.

During 1885 some 40 cases of sickness occurred caused by eating pressed and corned beef. No attention is paid to the State law concerning adulteration of food and drink. Very little oleomargarine or analogous substance is handled.

Slaughter Houses and Abattoirs.—Animals for city markets are obtained from surrounding country, within a radius of about 30 miles, and from Davenport, Iowa, stock-yards. The number annually slaughtered for home consumption is about 2,600 beeves, sheep and calves each, and 4,000 hogs; for shipment about 6,000 hogs. They are conveyed to place of slaughter on foot and in wagons. No legislation is had or other means secured for supplying food or water to animals in transit. Animals are not inspected before slaughtering. No observations have been made relative to fright or terror in animals, causing changes in secretions or flesh, whereby milk or meat is rendered unwholesome. Animals deprived of food for 24 hours a day or two before killing become feverish. Animals that die in transit are taken to fertilizer factory. Slaughter houses are erected at expense of owner.

The city, in 1885, erected an abattoir, at its own expense, and passed an ordinance providing for the killing therein of all animals for city consumption. This the butchers declined to do, and suit is now pending in the Appellate Court of the Second district to test the validity of the ordinance. The business of slaughtering is now conducted in small establishments scattered around the city beyond its limits. They do not drain into covered or open sewers flowing through the city. They are considered as nuisances in their neighborhood, because they are unclean from stem to stern. In the abattoir erected, every facility is afforded the butchers, but as they are fighting the city, no comparison can be made as to how the butcher would profit by it as compared with the old system. It is proposed at the abattoir to charge a rental of 25c per head for beeves, 10c for calves and sheep and 15c for hogs, the butcher to have all the offal. At the abattoir, fat, tallow, etc., would be removed to rendering factory, while at the small slaughter houses, animal refuse is either fed to hogs or rots upon the ground. If the courts decide against the city in the abattoir case, there will remain no protection to the public from any subsequent nuisance in the disposal of hogs fed in such a manner. Their meat, compared with corn-fed hogs, is very unfavorable, being soft and flabby. Rendering of animal refuse is not done on day of slaughter. Private slaughter-houses have no means of cooling meat, but a cooling room is provided in the abattoir.

The following extracts from the ordinance "to establish a city abattoir and providing for the management and use thereof," contain all the sanitary information on this subject not furnished in the foregoing:

Section 1 describes the location of the establishment.

Sec. 2. Said abattoir is established and shall be maintained for the sole use and purpose of so regulating the business of furnishing fresh meats to the inhabitants of said city as reasonably to secure to them good, fresh, wholesome meats.

Sec. 3. The commissioner of health shall have the care, custody, charge and management of the city abattoir, and it shall be his duty to see that the same is conducted in a clean and orderly manner, and that all the provisions, rules, and regulations adopted by the city council for the government and use thereof are enforced, and that the rights and privileges of all persons entitled to use the same are allowed and given without discrimination or distinction; and in the conduct and management of said abattoir the commissioner of health is hereby authorized and empowered to employ a deputy or deputies; the number and compensation of such deputies to be fixed and determined by the city council.

Sec. 4. Every person licensed under the ordinances of this city to sell fresh meats shall be entitled to use said abattoir upon compliance with the provisions, rules, and regulations governing the use thereof.

Sec. 5. If any person licensed under the ordinances of this city to sell fresh meats shall, in the use of said abattoir, refuse or neglect to comply with the provisions, rules and regulations governing the use thereof, the commissioner of health shall suspend such person from further use thereof, and shall forthwith report such suspension and the cause thereof to the city council for its action thereon.

Sec. 6. Said abattoir shall be open for use for the inspection and slaughter of animals each day from 4 o'clock A. M , to 7 o'clock A. M., and from 2 o'clock P. M. to 8 o'clock P. M., during the period from May 1 to November 1, and from 6 o'clock A. M. to 9 o'clock A. M , and from 11 o'clock A. M. to 6 o'clock P. M., during the period from November 1 to May 1.

Sec. 7. Every person licensed under the ordinances of this city to sell fresh meats, of. cattle, hogs, sheep, calves, or lambs, shall, before offering such meats for sale, have the same inspected and approved by the commissioner of health or his deputy at the city abattoir or at any licensed packing house or other place in this city licensed for the slaughter of animals. And it shall be the duty of said commissioner of health, in person or by deputy, to inspect meats at said places other than said abattoir at all reasonable hours, and to as fully as possible meet the convenience of persons asking such inspection.

Sec. 8. Every person desiring to use said abattoir shall first pay the commissioner of health for such use as follows, to-wit:

For each head of beef cattle therein brought for slaughter, the sum of	25 cents
For each head of sheep or lamb therein brought for slaughter the sum of	10 cents
For each head of hog, shoat or pig, therein brought for slaughter, the sum of	15 cents
For each head of calves therein brought for slaughter, the sum of	10 cents

Sec. 9. All cattle, hogs, sheep and calves, the flesh of which shall be desired to be sold by any person licensed to sell fresh meats within the limits of this city shall be first inspected by the commissioner of health or his deputy at the city abattoir or at any licensed packing-house or other place in this city licensed for the slaughter of animals before slaughter thereof, and before such flesh shall be sold or offered for sale by any person so licensed.

Sec. 10. It shall be unlawful for any person licensed to sell fresh meats to sell or offer for sale within the limits of said city any fresh meats (except venison, poultry, fish or wild game), unless the same has been first inspected and approved by the commissioner of health or his deputy as herein provided.

Sec. 11. The entire offal or refuse of any animal slaughtered at the city abattoir shall be immediately removed therefrom by the owner thereof, but such owner may in lieu of removing the same turn the whole thereof over to the commissioner of health to be by him removed and disposed of for the benefit of the city; and if any owner of such offal shall fail, refuse, or neglect to remove the same immediately, it shall be deemed and considered as abandoned to the city to be disposed of by it.

Sec. 12. The commissioner of health or his deputy shall, as the convenience of business may require, assign to any person desiring to use said abattoir the place therein where his animals shall be kept before slaughter; and any and all persons using said abattoir shall obey the orders and directions of said commissioner or his deputy in the use thereof.

Sec. 13. It shall be the duty of the commissioner of health to visit in person or by deputy as often as convenient, all places licensed for the sale of fresh meats, and if he shall find therein any putrid, diseased, offensive or unwholesome meats, or any meats that have not by him been inspected and approved, or any offal, he shall order the proprietor or person in charge of such licensed place to remove such meat or offal forthwith. Said commissioner shall, without delay, report in writing the facts in relation to such matter to the city council, and the license of such person having on his premises any such meat or offal shall be subject to revocation therefor by the mayor or city council, as provided by section five (5) of chapter twelve (12) of the city ordinances.

Sec. 14. The commissioner of health shall from time to time report to the council, for its consideration, such rules and regalations for the use of the abattoir as he shall deem desirable and expedient to be adopted.

Section 15 requires the commissioner to keep accounts, make reports, etc.

Section 16 provides penalties for violation of the provisions of the ordinance.

MANUFACTORIES AND TRADES.—There are no manufacturing establishments within the city limits that are considered nuisances; but the small slaughter houses and rendering establishments outside the limits and referred to heretofore, are considered such. No restrictions are imposed upon any manufactories by local ordinance.

None of them pollute the water supply. They all produce noxious vapors, but none of them produce disease in workmen so far as known. The hours of labor are usually 10, with one hour for dinner. Women and children are not employed in any factories.

The cubic space and ventilation in the rooms occupied by work-people is generally satisfactory. No diseases have been observed due to insufficient air for them. The arrangements for privies and water-closets in these establishments are satisfactory.

HOSPITALS AND PUBLIC CHARITIES.—There is one hospital in the city, the St. Luke's, at 1014 Third avenue. It contains six beds. This accommodation seems to be sufficient. There are no free dispensaries and public charity costs the city nothing, other than the sum of $360 to a physician for the poor.

POLICE AND PRISONS.—The police force consists of a marshal, deputy and eight policemen. Seven of the force are on duty as night patrol. The members of the force act as inspectors of nuisances. There is one temporary lock-up, both sexes being confined therein in separate cells. The average daily occupancy is two. Total air space in lock-up, 5,400 cubic feet. Cells are 10 x 12 feet. Vagrants are kept separate from other prisoners. Ventilation is effected by windows. Privy arrangements are pan closet. No bathing facilities except wash basin.

There is a patrol-wagon ready for use as an ambulance and in cases of emergency.

The Rock Island county jail is in the city; its average occupancy is about ten. The single cells are 5 feet by 8 feet 10 inches, and 10 feet high, ventilated from corridor through grated door. No epidemics have ever occurred among the prisoners. Diet allowed them is soup, coffee, bread, meat, potatoes, beans and molasses. No means to prevent indolence are provided.

There are probably four or five houses of prostitution in the city and twenty prostitutes; none allowed when known. The licence system has not been tried. These women are more subject to venereal and nervous diseases than other women.

There are fifty-seven places in the city at which intoxicating drinks are sold to be drunk on the premises, four of these being beer gardens. During last year one hundred and twenty-five cases of drunkenness were brought before police courts. In cases where saloons are orderly, the municipal ordinances are not very strictly enforced.

FIRE ESTABLISHMENTS, ETC.—The fire establishment is a voluntary organization. The apparatus connected with it is one steam engine, one hand engine, seven hose carriages and one hook and ladder truck. The supply of water in case of fire is derived from the Mississippi river; it is abundant, and distributed by the Holly system. Fire extinguishers are not in general use; those most in favor are the Babcocks. The annual expense of the fire department is $2,500, and the number of employés connected with it 150. No accidents have occurred in two years to men in line of duty. There is no ambulance system or medical man connected with the department. General character of the men for discipline, efficiency and sobriety, good. There was no loss of life from fire last year. Property to the value of $2,750 was destroyed. No fires last year due to dangerous or unfit fluids for lighting purposes, but 15 from carelessness. None from spontaneous combustion or of incendiary origin.

Regulations concerning the storage of gunpowder, nitro-glycerine, dynamite, coal oil, etc., require them to be stored two miles from corporation limits, but are not fully enforced. No measures are taken to insure inspection of illuminating oils. The State law requiring doors of public buildings to open outwards is complied with.

CEMETERIES AND BURIAL.—There are no cemeteries within the city limits, but three near by, viz.: Chippianock, Lutheran and Catholic. Estimated number of graves in each 4,000, 500 and 2,500, respectively. It is not probable that subsoil drainage from the land containing these graves contaminates springs, wells or water courses in the neighborhood. Average depth of graves, 6 feet; nature of soil, clay, and usually dry at the depth the body is placed. No vaults are in use. No nuisance or evil effect has been observed from the cemeteries. No extra precautions are taken with regard to the burial of persons dying of contagious diseases. The receiving vaults are managed so as not to become nuisances. Burial permits are required.

PUBLIC HEALTH LAWS, REGULATIONS, SANITARY OFFICIALS.—The sanitary administration of the city is vested in a commissioner of health, who is a physician, appointed by the mayor and confirmed by the city council; term of office, two years; annual salary, $600. His powers and duties are defined in chapter ix of the laws and ordinances of the city, of which chapter the following sections and parts of sections are the most important.

Sec. 2. It shall be the duty of the commissioner of health, at all times, to see that all business is conducted with due regard to the public health and comfort, and to report in writing to the mayor, all delinquencies in that respect, and to request the revocation of any license which he may deem necessary for the proper preservation of the public health or comfort, and he shall have and exercise a general supervision over the sanitary condition of the city, and in case of any emergency, to report the same to the city council. He shall give to the mayor and other city authorities all such professional advice and information as they may require, with a view to the preservation of the public health; and whenever he shall hear of the existence of any malignant, contagious or pestilential disease, he shall investigate the same, and adopt measures to arrest its progress.

Sec. 3. It shall be the duty of the said commissioner to enforce all the laws of the State and ordinances of the city in relation to the sanitary regulation of the city, and cause all nuisances to be abated with all reasonable promptness. And for the purpose of carrying out the foregoing requirements he shall be permitted at all times, from the rising to the setting of the sun, to enter into any house, store, stable or other building, or premises, in order to a thorough examination of cellars, vaults, sinks or drains, and to cause the floors to be raised, if he shall deem it necessary; and to cause all privies to be cleaned and kept in good condition, and to cause all dead animals or other nauseous and unwholesome things or substances to be buried, or removed, or disposed of as he may direct.

Sec. 4.* * Whenever the owner, occupant or agent of premises, in or upon which any nuisance may be found, is unknown, or can not be found, the said commissioner shall proceed to abate the same without notice; and in either case, the expense of such abatement shall be collected from the person or persons who may have created, continued and suffered such nuisance to exist.

Sec. 5. It shall be the duty of said commissioner to visit and examine, or cause to have visited or examined, all sick persons who shall be reported to him as laboring, or supposed to be laboring under yellow fever, small-pox, cholera, or any infectious or pestilential disease, and cause all such infected persons to be removed to such safe and proper place or places as he may think proper and necessary, and cause them to be provided with suitable nurses and medical attendance, at their own expense, if they are able to pay for the same, but if not, then at the expense of the city. All persons having any contagious or infectious disease in the city, are hereby required to be kept and confined within their respective dwellings, or places of abode, or place to which they have been removed, so long as there is danger of transmitting said disease.

Sec. 6. It shall be the duty of said commissioner to cause a notice to be placed upon or near any house in which any person may be effected or sick with small-pox, scarlet fever, or any infectious, pestilential or epidemic disease, upon which shall be written, or printed, in large letters, the name of such disease.* *

Sec. 8. The commissioner of health shall have charge of all houses, buildings and places wherever he may cause to be removed any person laboring, or supposed to be laboring under yellow fever, small-pox, cholera, or any infectious or pestilential disease, and shall have power to employ such assistants and nurses as he may deem necessary.* *

Sec. 9. The commisioner of health may take such measures, as he may from time to time deem necessary, to prevent the spread of small-pox, by issuing an order requiring all persons in the city, not having a certificate of vaccination, to be vaccinated within such time as he shall prescribe; and all persons refusing or neglecting to obey such order shall be liable to a fine of not less than three nor more than twenty-five dollars; *Provided*, That it shall be the duty of the commissioner to provide for the vaccination of such persons as are unable to pay for the same, at the expense of the city.

Sec. 10. Said commissioner of health shall always have on hand, as far as practicable, a sufficient quantity of vaccine virus; and he shall vaccinate and re-vaccinate, without charge, all persons who may apply to him for that purpose, and are unable to pay for the same; and shall give certificates of vaccination to children who have been vaccinated, and require certificates from physicians for admission to the public schools.

Sec. 11. Said commissioner, whenever, and at such times, as by him it shall be deemed necessary, may by proclamation (the approval of the mayor being first had and obtained), require all boats, vessels, railroad cars or other public conveyances bound for this city, before the same shall land or stop at any wharf, depot or landing, or stopping place therein, to touch or stop at the sites, places or stations, selected and established for quarantine purposes, and leave all such emigrants, travelers or persons, and all such sick, diseased or unclean persons, with their stores and baggage, as in the opinion of the officers, stationed at such quarantine sites, places or boundaries, shall be deemed proper on account of the existence or general report of cholera, yellow fever, or any contagious disease, or diseases apprehended to endanger the health of the city.

Sec. 16. The said commissioner shall make such rules and regulations for the government of the quarantine or health of the city, as, from time to time, he shall deem necessary; and the physicians or health officers in charge of any quarantine station or place, shall have power to make and enforce such regulations as may be necessary for the proper conducting and management thereof; and it shall be the duty of the persons in quarantine and all agents, officers, policemen, or others employed by the city in and about said quarantine stations or places, to carry out and obey the same.

Sec. 18. It shall be the duty of said commissioner to make a circuit of observation once in every week to every part of the city and its environs, which, from its location, or from any collateral circumstances, may be deemed the cause of disease; and in all cases where he may discover the existence of any agent, the presence of which will prove dangerous to the city, and there is no ordinance competent to the correction of the evil, he shall immediately report the same to the city council, accompanied with his opinion of the necessity of extraordinary or particular action.

Sec. 20. It shall be the duty of said commissioner to provide the necessary books for the keeping of a record of all his transactions, including the proper registration of births and deaths and such other statistical information as may be necessary; and he shall also keep on hand all necessary blanks to be used by physicians and midwives, and furnish them with the same on application.

Sec. 22. The commissioner of health shall fix upon a time not less than one hour in each day, when he shall be present at his office for the purpose of hearing complaints, and performing such official duties as may be required of him.

GENERAL SANITARY REGULATIONS.

1. The owner or keeper of any hotel, boarding house or lodging house, and the owner, agent of the owner, and the lessee of any tenement house, or part thereof, shall, whenever any person in such house is sick of fever, or of any infectious or pestilential or contagious disease, and such sickness is known to such owner, keeper, agent or lessee give immediate notice thereof to the commissioner of health, and thereupon said officer shall cause the same to be inspected, and may, if found necessary, cause the same to be immediately cleansed or disinfected at the expense of the owner, in such man-

ner as he may deem necessary and effectual; and he may also cause the blankets, bedding and bed clothes, used by such sick person, to be thoroughly cleansed, scoured and fumigated, or in extreme cases, to be destroyed.

2. Whenever it shall be decided by the commissioner of health that any building, or any part thereof, is unfit for human habitation, by reason of its being so infected with disease, or from other causes, as to be likely to cause sickness among the occupants, and notice of such decision shall have been affixed conspicuously on the part thereof so decided to be unfit for human habitation, and personally served upon the owner, agent or lessee, if the same can be found in the State, requiring all persons therein to vacate such building, or part thereof, for the reasons to be stated therein as aforesaid, such building or part thereof shall, within ten days thereafter, be vacated, or within such shorter time, not less than twenty-four hours, as in said notice may be specified.

3. That no person or persons shall throw, place or deposit, or cause to be thrown, placed or deposited, any dung, carrion, dead animal, offal, or putrid or unwholesome substance, or the contents of any privy upon the margin, or banks, or into the waters of the Mississippi river, within the limits of said city, or upon any street, alley or public grounds, or upon any lot within the limits of said city.

4. That no person shall permit or have any offensive water. or other liquid or substance, on his premises or grounds, to the prejudice of life or health, whether for the use in any trade, or otherwise; and no establishment or place of business for tanning, skinning or scouring, or for dressing hides or leathers, or for carrying on any offensive or noisome trade or business, shall hereafter be opened, started or established in the city of Rock Island, without a permit from the council. And every such establishment now existing shall be kept cleanly or wholesome, and be so conducted in every particular as not to be offensive or prejudicial to life or health.

5. That no swill, brine, urine of animals, or other offensive animal substance, nor any stinking, noxious or other filthy matter of any kind, shall, by any person, be allowed to run or fall from out of any building, vehicle or erection into or upon any street or public place, or be taken or put therein, save as elsewhere provided.

6. That no butcher's offal or garbage, nor any dead animals, nor any putrid or stinking anima or vegetable matter shall be thrown by any person, or allowed to go into any street, place, sewer or reciving basin, or into any standing or running water or excavation, or upon any ground or premises in the said city.

7. That no person shall draw off, or allow to run off into any ground, street or place of said city, the contents (or any part thereof) of any vault, privy, cistern, cess-pool, or sink; nor shall any owner, tenant or occupant of any building to which any vault, privy or cess-pool, shall appertain or be attached, permit the contents, or any part thereof, to flow therefrom, or to rise within two feet of any part of the top, or said contents to become offensive; nor shall any privy or other erection in this section mentioned be filled with or covered with dirt till its filthy contents shall be emptied.

8. That no person shall throw into or deposit in any vault, sink, privy or cess-pool, any offal, ashes, meat, fish, garbage or other substance, except that of which any such place is the appropriate receptacle; nor shall any slops or kitchen waste be permitted to run into any privy or cess-pool, except the same be connected with the sewer.

9. That neither the contents of any such tub, or of any receptacle, cess-pool, privy, vault, sink or water closet, cistern, nor anything in any room, excavation, vat, building, premises or place, shall be allowed to become a nuisance so as to be dangerous or prejudicial to health.

10. That no part of the contents of any privy, vault, sink, cess-pool, except substances other than excrements insoluble in water, or any accumulation of any offensive fluid, liquid or semi-liquid substance or material, being in any excavation, cellar or place, within the limits of the city of Rock Island, shall be removed therefrom, nor shall the same be transported through any of the streets or avenues of said city, unless and except the same shall be removed and transported by means of an air-tight apparatus, or in such manner as shall prevent entirely the escape of any noxious or offensive odors therefrom.

11. That no part of the contents of other substances from any sink, privy or cess-pool, nor any manure, ashes, garbage, offal, rubbish, dirt, nor any refuse or waste, or thing which, by its decomposition, could or would become offensive to human beings, or detrimental to health, or create or tend to create a nuisance, shall be by any person thrown, deposited or placed upon any street or public place, nor upon any vacant lot of land, or vacant place upon the face of any land, within the city of Rock Island, whether such lot be enclosed or otherwise, without the written permission of the commissioner of health; nor shall any of said substances be allowed by any person to run or drop from the premises occupied by such person into or upon any street or public place, nor upon any vacant lot of land, or vacant place upon the surface of any lot of land in said city, nor shall the same be thrown, deposited or placed, by any person, nor allowed to fall or run from the premises occupied by such person into the river, save through the proper underground connections.

12. That every person being the owner, lessee, or occupant of any room, stall or place where any meat, fish or vegetables, designed or held for human food shall be stored or kept, or shall be held or offered for sale, shall put and keep such room, stall and place and its appurtenances in a clean and wholesome condition; and every person having charge, or being interested, or engaged, whether as principal or agent, or in respect to the custody or sale of any meat, fish, birds, fowl or vegetables, designed for human food, shall put and preserve the same in a clean and wholesome condition, and shall not allow the same or any part thereof to be poisoned, infected or rendered unsafe or unwholesome for human food.

13. That every person shall cause every stable and place where any cows, horses or other animals may be, to be kept at all times in clean and wholesome condition, and shall not allow any animal to be therein while infected with any disease, contagious or pestilential among such animals, without a permit from the commissioner of health.

14. No livery stable keeper or other person, keeping or letting any carriage or other conveyance for hire within said city, shall convey or permit to be conveyed in any such carriage or other conveyance, any person having or supposed to have small-pox, cholera or any other infectious or contagious disease, or the body of any dead person who has died of any such disease.

15. That every butcher, grocer and milk dealer, and their agents, shall allow the parties authorized by the commissioner of health, to freely and fully inspect their cattle and milk, meats, fish and vegetables, held, offered, or intended for sale, and will be expected to answer all reasonable and proper questions asked by such persons relative to the condition thereof, and of the places where such articles may be.

16. That no pile or deposit of manure, offal or garbage, nor accumulation of any offensive or nauseous substance, shall be made within the limits of said city; nor shall any person or corporation unload, discharge, or put upon or along the line of any railroad, street or highway, or public place within said city, any manure, offal, garbage or other offensive or nauseous substance; nor shall cars or flats loaded with, or having in or upon them any such substance or substances, be allowed to remain or stand on or along any railroad, street or highway within the limits of said city, within three hundred yards of any inhabited dwelling.

17. That it shall be the duty of each and every practicing physician in the city to report in writing to the commissioner of health the death of any of his patients who shall have died in said city, of contagious or infectious disease, within twenty-four hours thereafter, and to state in such report the specific name and type of such disease.

18 It shall be the duty of each and every practicing physician in the city to report to the commissioner of health immediately after he has discovered the same, the name and place of residence of any person in said city who is suffering from small-pox, cholera, yellow fever, scarlet fever, diphtheria, or other contagious disease, also typhoid fever and cerebro-spinal fever. Any physician violating the provisions of this ordinance shall be fined in a sum not less than twenty-five dollars nor more than two hundred dollars.

19. That no parent, master or custodian of any child or minor (having the power and authority to prevent), shall permit any such child or minor to be unnecessarily exposed or to needlessly expose any other person to the taking or to the infection of any contagious disease.

20. That no principal of any school, and no principal or teacher of any private, sectarian or other school, shall admit to any such school any child or minor, who shall not have been vaccinated within seven years next preceding the admission, or application for admission, to any such school of such child or minor; or shall any such principal or teacher retain in or permit to attend any such school any such child or minor or who shall not have been vaccinated within seven years next preceding the taking effect of this article.

21. The evidence of such vaccination to be presented to any such principal or teacher, as is mentioned in the preceding section, shall be a certificate signed by the commissioner of health, or any physician duly licensed by the State Board of Health.

22. The commissioner of health is hereby empowered to visit any and all public and private schools in the city and make, or cause to be made, an examination of the children and minors in attendance therein, as often as he may deem necessary to secure compliance with the provisions thereof.

23. That every physician, midwife and other person who may assist or be present at the birth of any child, shall make a registry of every such birth and the time and place, ward and street, number of such birth, and the sex and color of every child born, and the names and residence of each of the parents (so far as the foregoing facts can be ascertained), and deliver such register, or a copy thereof, to the commissioner of health within five days after the birth of such child.

24. Any person who shall, within the jurisdictional limits of this city, violate, disobey, resist, neglect or refuse to comply with any of the provisions, requirements or regulations in this chapter contained, shall, upon conviction, be subject to a fine of not less than five dollars nor more than two hundred dollars for each offence.

REGISTRATION AND STATISTICS OF DEATH and DISEASE.—Burials do not occur without record of death and permission granted by health authorities. A local system of registration of causes of death is in force. (See foregoing ordinance). And the regulation is fully complied with. These statistics for the past five years have been published in the annual report of the commissioner of health. Cases of scarlet fever, diphtheria, small-pox, cerebro-spinal and typhoid fevers and cholera are required to be reported to the commissioner. Location and dates of each are recorded. Small-pox was epidemic in 1882 to the extent of 15 cases, resulting in two deaths. Cholera, yellow fever, scarlatina, diphtheria, cerebro-spinal fever and typhoid fever have not been epidemic in the city since the organization of the health department in 1882.

Following is a tabular statement, by months and years, of the mortality from specified diseases; of deaths at given ages; of still-births, and of births:

Deaths from—	Year	Jan....	Feb....	March..	April...	May....	June....	July....	Aug....	Sept....	Oct....	Nov....	Dec....
Malaria fever	1881	....	1	....	....	1	....	2	1	....	1	....	....
	1882	....	1	1	....	....	....	....	.	....	....	....	....
	1884	....	2	....	....	....	....	....	....	....	....	....	....
Typhoid fever	1881	....	1	6	1	....	....	1	2	....	3	1	....
	1882	1	4	2	1	....	....	....	2	1	3	1	....
	1883	....	....	....	1	....	....	....	2	....	1	....	1
	1884	1	....	1	....	....	....	3	2	....	2	....	....
Cerebro spinal fever	1881	....	....	1	12	7	3	6	2	....	....	1	2
	1882	2	4	9	2	....	1	1	....	....	....	....	....
	1883	....	....	....	....	....	....	....	....	....	....	1	1
	1884	1	....	1	....	....	....	1	1	....	2	....	1
Dysentery	1881	....	....	....	....	....	....	....	....	....	1	....	....
Diarrhea	1881	1	2	1	1	....	...	8	1	4	....	....	....
	1882	....	....	....	2	....	....	2	5	2	....	....	....
	1883	....	....	....	....	....	....	8	2	1	2	....	1
	1884	....	....	1	....	....	....	1	4	1	....	....	....
Scarlatina	1881	2	....	3	....	2	2	2	....	....	2	....	1
	1882	....	2	2	....	....	....	....	....	....	....	....	....
	1884	....	....	....	2	....	....	....	....	....	1	....	1
Diphtheria	1881	....	....	....	1	3	....	....	....	....	....	....	....
	1882	1	....	....	....	....	2	1	....	....	3	2	....
	1883	1	1	....	....	....	....	....	....	....	2	....	3
	1884	....	1	....	1	....	....	....	2	....	2	4	7
Croup	1881	1	1	2	....	....	....	....	....	....	....	1	1
	1882	....	....	1	1	....	....	....	....	1	...	2	....
	1883	....	....	....	....	....	....	....	....	1	....	1	....
	1884	1	1	1	....	....	....	....	....	....	....	....	1
Measles	1881	....	....	....	....	3	1	1	....	....	....	....	....
	1883	....	....	2	1	....	....	1	....	....	....	....	....
Whooping cough	1881	....	....	....	1	....	....	....	....	1	....	....	....
	1882	....	....	1	....	....	....	....	....	....	....	....	....
	1884	....	....	....	....	....	....	....	1	....	....	....	1
Pneumonia	1881	....	....	1	3	2	....	....	....	....	1	1	....
	1882	2	2	1	....	2	1	1	....	1	....	....	....
	1883	....	3	3	1	....	....	1	1	....	....	....	....
	1884	1	2	3	....	....	....	....	1	....	....	....	1
Pleurisy	1883	....	1	....	....	....	....	....	....	....	....	....	....
Phthisis	1881	1	2	2	2	4	2	1	5	2	1	6	8
	1882	1	4	8	2	1	1	....	1	....	3	2	3
	1883	1	1	2	1	2	1	....	3	1	3	1	1
	1884	....	....	5	1	....	3	1	1	3	3	3	....
All other diseases of the lungs	1881	....	....	1	4	....	....	....	1	....	....	1	1
	1882	1	....	....	1	1	....	1	....	2	1	....	....
	1883	2	1	2	1	....	....	1	1	....	....	....	....
	1884	....	....	....	1	....	....	....	1	...	1	...	1

Mortality—Continued.

Deaths from—	Year.	Jan....	Feb....	March....	April....	May....	June....	July....	Aug....	Sept....	Oct....	Nov....	Dec....
Diseases of the heart....................	1881	....	1	....	....	1	....	....	....	....	....	1	1
	1882	....	3	....	....	....	....	....	2	....	....	....	....
	1883	....	2	2	....	1	1	1	....	....	2	2	....
	1884	....	....	1	....	....	2	....	....	....	....	....	....
Diseases of the urinary organs........	1881	1	....	....	1	....	....	....	....	....	1	1	....
	1882	....	1	....	....	....	....	....	2	....	....	....	....
	1883	....	....	1	....	....	1	1	....	....	....	....	1
	1884	1	....	1	....	....	....	1	1	....	....	....	....
Apoplexy..............................	1881	....	....	....	....	....	....	....	....	....	....	....	1
	1882	....	....	....	....	....	....	....	....	1	....	1	....
	1883	....	....	....	1	....	....	1	....	....	....	....	....
Tetanus.................................	1882	....	....	....	....	...	....	2	....	....	1	....	....
	1883	....	....	....	....	....	....	....	1	....	....	....	....
Puerperal diseases..................	1881	....	3	....	1	....	....	....	....	....	1	....	....
	1882	....	....	....	....	....	....	....	....	....	....	1	....
	1883	....	1	....	....	....	....	....	....	....	....	....	....
	1884	1	....	1	....	....	....	....	....	....	....	....	....
Deaths of children under one year of age................................	1881	3	6	7	6	9	3	14	7	5	6	3	5
	1882	6	5	9	1	3	4	6	9	9	5	1	4
	1883	5	4	1	3	3	2	10	3	1	6	3	2
	1884	....	4	4	1	....	3	7	8	5	5	1	3
From one to five......................	1881	4	6	5	8	9	5	7	4	3	2	....	1
	1882	1	6	5	5	2	5	2	3	1	1	4	....
	1883	1	2	4	4	1	2	3	2	2	3	....	4
	1884	1	4	3	2	1	1	....	4	....	2	3	9
From five to fifteen	1881	4	....	6	6	3	3	1	2	2	2	....	1
	1882	2	4	4	1	1	....	....	1	2	4	1	....
	1883	2	2	....	1	....	....	1	....	....	....	....	....
	1884	1	1	1	2	....	1	....	1	1	4	3	5
Still-births, including abortions at all periods of utero-gestation...........	1881	....	1	....	....	....	2	....	1	2	1	2	....
	1882	2	1	1	....	1	3	2	2	....	1	2	1
	1883	3	2	....	1	....	1	2	2	....	1	....	2
	1884	1	....	2	1	....	....	1	1	2	2	1	....
Number of births......................	1881	25	28	23	15	21	18	26	24	25	22	18	17
	1882	9	11	17	14	15	22	25	35	16	16	21	17
	1883	15	23	10	22	31	17	27	38	23	25	31	22
	1884	20	31	42	22	18	46	21	30	33	35	26	37

There have been no deaths during the period covered by the above tables from erysipelas, hydrophobia, or trichina.

Malarial, typhoid and diphtheritic diseases and cerebro-spinal fevers are less prevalent than formerly, and no disease has increased in prevalence. Immigrants from abroad or other parts of the country do not suffer from the climate. The total amount of money appropriated by the city for sanitary purposes for the last fiscal year, 1886, was $2,260; expended, $2,342. Appropriated for sewerage, $3,000; expended, $2,796.14. For repair, cleaning and opening of new streets, $16,000. Garbage is removed at an expense of about $900 per year. The total municipal expenses for the year 1886 was $92,565.

PUBLIC SCHOOLS.—The total number of scholars registered for the year 1886 was 2,163; average daily attendance 1,686. Grade No. 1, 289; No. 2, 232; No. 3, 110; No. 4, 214; No. 5, 203; No. 6, 187; No. 7, 161; No. 8, 110; No. 9, 93; high school, 103. The programme of daily exercises varies with each grade. First grade pupils have half-day sessions; high school pupils, one session, from 9 until 2; all other grades usual morning and afternoon sessions. This arrangement meets with general favor.

Frequent change of position is had from sitting to standing posture.

For the first seven years of school life but little home study is encouraged; after that, as teachers think best, usually from one to two hours. Schools are in session annually for 9 months of 20 days each. Two weeks vacation is had in mid-winter, two weeks in April and twelve weeks in summer. In suitable weather exercise in the open air is compulsory. Competition for prizes is not a feature in the system of instruction. Suspension is used as a method of correction and punishment; corporal punishment is occasionally resorted to.

Children can not be enrolled without first showing certificate of vaccination as required by the STATE BOARD OF HEALTH. A vaccination order was first promulgated twenty years ago by the local board, but was not regularly enforced until January, 1882, since which time no cases of small-pox have occurred among either teachers or scholars. Scholars in families where scarlet fever or diphtheria is prevailing are not allowed to attend school and can only re-enter on permit from the city clerk issued on the proper certificate.

Two-story school buildings only are allowed to be built. It is considered advisable for the sexes to have identical school hours, sessions, lessons, etc., and perfectly safe for them to be in competition.

The school buildings are heated by stoves; mean temperature of rooms in cold weather maintained at about 70°; about 200 bushels of soft coal annually required to heat each room. Some rooms are supplied with ventilating flues, and when the weather permits windows are opened. This mode of ventilation is not generally satisfactory. Privy arrangements are the ordinary outhouses with vaults. Basements are used for storing fuel, and are ventilated separately from rest of the building. Water supply is from the Mississippi river and is abundant. Some of the rooms are not sufficiently lighted. No opportunities are had for the pupils to exercise sheltered from the cold, heat or wet. Patterns of desks in use are Andrews' and Union School Furniture Company, and are, as a rule, satisfactory.

Sanitary Survey of Springfield.

By B. B. Griffith, M. D.

Location, Population and Climate.—Springfield, the capital of Illinois, is situated in Sangamon county, latitude 39 deg. 17 min. 56 sec. north, longitude 89 deg. 39 min. 20 sec. west. It is 185 miles south of Chicago, 98 miles north of St. Louis, and is on the lines of the Chicago and Alton, the Wabash, St. Louis and Pacific, the Illinois Central, the Ohio and Mississippi, the Indianapolis, Decatur and Springfield, the Chicago and St. Louis, the St. Louis and Central Illinois, and the Jacksonville and Illinois Southeastern railways. It is within a few miles of the geographical center of the State.

Springfield was founded in 1827 and incorporated under the general incorporation laws of the State February 22, 1882. Its population in 1860 was 9,320; in 1870, 17,364; in 1880, 19,743; present population, census of 1886, is 28,532. The estimated number under 5 years of age is 3,709. Natives number 22,254; foreigners, 6,278. The number of negroes and mulattoes is 1,559.

Meteorological observations have been regularly recorded in the city since July, 1879, by the United States signal service and have been published in the annual reports of the State Board of Health.

METEOROLOICAL RECORDS, CITY OF SPRINGFIELD, 1879–1886, INCLUSIVE

Month.	Mean corrected Barometer....	Temperature.			Precipitation—inches....	Mean relative humidity	Wind.	
		Maximum ..	Minimum ..	Mean			Prevailing direction..	Total movement.....
1879.								
July	29.968	....	....	81.6	1.46	54.3	SW	3,820
August	29.963	....	....	74.7	3.82	61.1	S	5,099
September	30.094	....	....	60.9	.84	59.4	S	5,954
October	30.129	....	....	61.9	1.25	59.6	S	5,831
November	30.100	....	....	44.7	5.12	63.2	S	7,595
December	30.118	....	....	31.7	2.88	65.8	NW	7,046
1880.								
January	30.043	....	....	43.8	2.70	70.3	S	8,048
February	30.066	....	....	38.2	2.89	58.9	S	7,826
March	30.119	....	....	42.3	2.37	59.9	NW	8,061
April	29.953	....	....	56.8	3.23	54.2	S	9,059
May	29.971	....	....	68.6	5.76	61.0	S	7,358
June	29.952	....	....	74.4	2.47	62.6	S	5,974
July	29.974	....	....	77.1	1.82	61.7	NW	5,104
August	29.988	....	....	77 2	1.80	59.6	S	5,284
September	30.061	....	....	64.6	3.15	61.9	S	5,999
October	30.083	....	....	53.6	2.04	58.7	S	6,987
November	30.234	......:	....	32.7	1.60	63.2	NW	6,493
December	30.170	....	....	26.2	1.10	69.1	NW	7,020

Meteorological Records—*Continued.*

MONTH.	Mean corrected barometer	TEMPERATURE.			Precipitation—inches	Mean relative humidity	WIND.	
		Maximum ..	Minimum ..	Mean			Prevailing direction..	Total movement....
1881.								
January	30.191	....	....	22.4	0.84	67.7	S	6,508
February	30.121	....	....	29.5	5.85	70.6	NW	7,236
March	29.910	....	....	36.2	4.45	70.8	NW	7,752
April	30.012	....	....	48.7	1.96	67.1	NW	5,959
May	29.976	....	....	70.3	2.86	64 2	S	5,347
June	29.919	....	....	72.2	4.96	71.5	S	5,821
July	30.022	....	....	79.0	3.37	66.3	W	4,711
August	30.010	....	....	78.5	4.03	56.9	S	5,410
September	29.984	....	....	72.1	6.43	67.9	S	6,082
October	30.116	....	....	58.7	10.02	81.2	S	6,354
November	30.158	....	....	42.0	6.93	72.5	S	7,386
December	30.186	....	....	39.9	4.81	72.1	S	5,932
1882.								
January	30.190	....	....	31.7	2.48	73.1	S	6,602
February	30.097	....	....	42.2	7.92	66.7	S	6,899
March	30.095	....	....	44.3	4.92	61.9	NW	8,157
April	30.024	....	....	55.2	3.85	60.1	NE	6,659
May	29.961	....	....	57.9	10.59	68.6	S	6,553
June	29.915	....	....	71.4	12.71	7.26	SW	4,963
July	30.030	....	....	72.2	1.89	65.6	S	4,218
August	29.996	....	....	72 6	3.13	73.9	NW	3,709
September	30.083	....	....	65.6	1.21	68.5	NE	4,628
October	30.026	....	....	58.9	3.76	71.4	S	5,420
November	30.185	....	....	43.9	2.60	68.9	NW	5,926
December	30.154	....	....	30.7	3.19	68.9	NW	6,659
1883.								
January	30.194	....	....	20.9	1.96	69.8	W	7,707
February	30.306	....	....	29.5	7.53	71.1	NW	5,953
March	30.095	....	....	38.3	1.36	62.8	NW	8,181
April	29.944	....	....	54.2	4.42	61.7	S	7,491
May	29.936	....	....	60.1	6.61	65.2	S	6,949
June	29.935	....	....	69.7	8.40	73.7	S&NW	5,355
July	30.010	....	....	74.9	3.77	68.9	S	6,017
August	30.061	....	....	70.5	0.95	67.2	E	4,938
September	30.054	....	....	63.2	1.06	62.1	S	6,039
October	30.097	....	....	53.2	6.08	73.8	NE	6,617
November	30.151	....	....	44.3	3.48	63.8	S	7,913
December	30.144	....	....	33.8	3.17	71.0	S	7,692
1884.								
January	30.239	62.5	—22.3	29.8	1.51	73.0	S	6,678
February	30.077	55.1	5.6	32.1	4 24	75.1	NW	7,403
March	30.038	66.5	7	40.0	3.70	70.7	S	7,904
April	29.967	80	32.2	51.8	2.49	62.9	NE, S&W	7,806
May	29.961	78.1	41	62.2	3.79	65.0	S	5,415
June	30.005	90.8	50.9	71.3	6.20	74.9	S	4,248
July	29.926	90.3	61.2	74.3	3.62	69.1	NW	4,340
August	30.042	91.1	48.9	71.7	1.54	66.1	S	5,032
September	30.037	91.1	50.9	70.8	6.86	68.8	S	5,780
October	30.164	86	34.9	59.7	2.74	68.3	S	5,097
November	30.149	66.9	13.6	44.2	1.30	68.9	NW	5,374
December	30.174	60	—8.8	29.1	5.19	76.4	S	7,076
1885.								
January	30.190	53.9	—13.7	20.3	2.81	74.2	NW	6,337
February	30.046	54.8	—11.2	20.9	0.94	67.7	W	5,562
March	30.098	65.5	12.0	36.8	0.17	61.1	NW	7,493
April	29.977	76.2	30	51.7	6.36	68.0	S	7,577
May	29.897	82.4	38	61.4	2.78	62.9	NW	6,375
June	29.978	88.3	50	71.0	4 18	66.6	S	4,408
July	29.931	96.2	53	78.1	1.82	67.0	SW	3,522
August	29.938	92.1	48	71.0	4.82	69.4	N	4,557
September	29,993	82.3	44.5	61.9	4.47	70.7	S	4,024
October	29.955	75.4	36.5	52.9	6.30	69.1	NW	5,569
November	29.974	70.2	29.8	45.6	1.44	68.1	NW	6,978
December	30.091	58.0	6.0	35.6	2.52	69.9	S	7,335

Meteorological Records—*Continued.*

Month.	Mean corrected barometer.....	Temperature.			Precipitation—inches.........	Mean relative humidity	Wind.	
		Maximum ..	Minimum...	Mean........			Prevailing direction..	Total movement......
1886.								
January	30.073	58.0	—12.9	22.7	2.19	74.1	NW	7,895
February	30.087	58.0	—11.1	31.0	1.86	70.4	S	8,044
March	29.959	77.0	18.0	41.3	2.45	69.7	S&NW	8,170
April	29.987	81.0	24.5	56.1	2.98	68.4	S	7,411
May	29.917	85.8	42.9	65.6	3.56	67.4	S	5,427
June	29.925	88.1	49.5	71.4	3.83	67.7	S&SE	4,165
July	29.930	95.9	58.5	77.6	.05	61.3	NE	3,733
August	29.972	99.4	54.4	76.1	4.19	69.7	S	4,606
September	30.056	89.6	44.6	68.2	7.24	71.5	S	5,404
October	30.190	82.7	48.7	57.9	.80	67.1	S	5,155
November	30.051	72.9	20.3	42.4	1.74	66.2	W	7,344
December	30.198	54.5	—5.6	26.4	.80	72.9	S	5,937

TOPOGRAPHY.—The country surrounding the city on the east and south is level or gently rolling, while on the north and west there are hills extending some seven or eight miles, the altitude above the sea level of the highest being about 650 feet. To the north of the city about four and a half miles is a tract of low land known as the "river bottom," which is covered with water every spring, varying in width from one-fourth to one-half mile and about two miles in length. The altitude above the sea level of the bottom of the lowest valley or ravine near by is 522 feet; the valley trends to the northwest.

The following meteorological conditions and other influences affecting the health of the city are apparently due to the topographical features of its immediate vicinity; a humid atmosphere, the prevailing winds being from the south and southwest. The country is level for many miles in these directions, and in summer, after much rain, malarial fevers and diarrhœa prevail. The north and northwest are protected by timber. The east and southeast are level and traversed by water courses some miles from the city and an east wind for a day or two induces pneumonia, bronchitis and rheumatism.

The city is bordered on the south and southwest almost exclusively by grass lands; to the north and northwest by timbered lands; east and southeast by farms and market gardens. The east side of the site of the city is rather level, but toward the west it becomes quite hilly and rolling in character. The original conformation has been somewhat changed by the filling in of ravines and the covering over of some old water courses, the principal of which is the "old town branch," the bed of which is now occupied by a sewer.

The height of the bench mark above sea level is 602.72 feet, which is probably a fair average level of the town; extreme variations from this will not exceed 50 feet. The direction of the general surface slope of the city is northwest. Some of the city is "made land," but only a very small part of the residence portion. This ground before filling was low and wet, the bed of an old ravine, in many cases. It was drained thoroughly by natural drainage before filling in from three to five feet with dirt from excavations, etc. The "made land" is built upon to a moderate extent only, principally dwelling houses.

The streams of water passing by the city are, the Sangamon river on the north, on the west Spring creek, and on the east Sugar creek. The average width of the Sangamon is about 80 feet, Sugar creek 40 feet, Spring creek 30 feet. The average depth of the Sangamon is about four feet, Sugar creek three feet, Spring creek three feet. All are sluggish in movement. The character of the sides of these streams are variable even for the same stream; as a rule, however, they are gradually sloping, the amount of water changing, a limited extent of shore is exposed. The shore is most frequently mud, in some places, however, the exposed shore is hard ground. The water is generally clean and clear, but in high water it is muddy. The river water has been fouled by the distillery and paper mill. The bed and shores of the stream are subject to the deposit of organic matter only as it drains from the adjacent grounds. There are in the course of these streams a few places which at times are only slightly covered with water. There are a few dams in the streams and also some natural water falls. None have a height of fall over six feet. The character of the streams above the water falls is deep and rapid.

The city sewerage enters Spring creek northwest of the city, and thence empties into the Sangamon river below the pumping works. There are some artificial ponds just outside the north part of the city, about one mile long and one-eighth of a mile in width; in the hot months of summer these become stagnant and are frequently covered with a green scum. Such stagnant water quite frequently emits a percepible odor, but never sufficient to become a nuisance.

No part of the city is subject to overflows, but frequently in the spring time the soil becomes saturated, but such condition is only temporary and does not seem to produce any injurious effect in the health. Such saturation generally increases the height of water in the wells, variable in degree according to the degree of saturation.

The city and vicinity belong to the carboniferous period. The surface rocks are sand-stone, and the underlying strata, in order of succession downward are soil, drift clay, tumbling masses of lime-stone, slate, coal, lime-stone. The strata dip from west to east a slight angle. The character of surface soil is black rich loam.

Formerly, when the surface soil was disturbed, malarious effects followed. At the present time such effects are only observed when a large piece of land is broken, especially prairie ground. No other diseases are believed to be due to the soil or geological formation. Possibly typhoid fever may have been spread by the flow of underground water. Two seasons of prolonged drought have been followed by such epidemics, most of the cases occurring in the inadequately drained portion of the city, where privies serve for the receptacle of the discharges of such patients.

WATER SUPPLY.—The public water supply is from the Sangamon river, some five and one-half miles north of the city. Distributed by pumping directly from the works and also by gravity from a reservoir. The system used is that known as the Worthington system. As a source of contamination there is the town of Riverton five miles above the pumping works. A distillery and paper mill located at Riverton were also sources of contamination when in operation; these are now idle. The immediate gathering-ground from which the water is drained is manured to only a very slight degree; this offers no source of contamination worth considering.

The water is brought about five and one-half miles in an iron conduit, 15 inches in diameter. The water is accumulated in one settling reservoir, No other process of filtering or purifying is used.

The highest capacity for storage is 4,000,000 gallons. The average amount of water supplied per diem is 225,000 gallons; the maximum, 250,000 gallons; the minimum, 200,000 gallons. The endeavor is to keep the reservoir full in case of fire and emergencies, its capacity being 4,000,000 gallons. There are no public fountains. There are 115 fire plugs.

The water was both offensive in taste and odor in the summer of 1881, this was caused by the distillery emptying a great deal of fermenting material into the river at the time of low water, thus rendering the water unfit for any purpose. The distillery has since ceased operations and no further contamination results from this source. The extent of this pollution may be inferred by the result of the investigation made by the Secretary of the STATE BOARD OF HEALTH in 1879. An analysis of a specimen of Sangamon river water collected in October of that year at a point just above Riverton, gave 41 parts of organic matter in 1,000,000 parts of water; a specimen taken at the same time from the river below the paper mill and distillery gave 126 parts of organic matter: and the water from the service pipe in the Secretary's office in the State House gave 73 parts of organic matter—the loss being attributed by the Secretary in his report to the areation caused by pumping and consequent oxidation of the organic matter. Subsequent examinations confirmed these results, and were compared with the water from an experimental well sunk at the waterworks and which gave only 24 parts of organic matter (vegetable) in the million. See *Second Annual Report, State Board of Health*, p. 116.

The majority of the inhabitants depend on wells and cisterns for water for domestic use. There are 3,178 wells in the city and

3,937 cisterns. The character of the soil where wells are dug is black loam on the surface, with yellow clay beneath. Wells are usually 20 feet to the bottom and about 12 or 14 feet to the surface of the water. Most generally the wells and cisterns are so situated and constructed as to be free from cess-pool and privy contaminations, but in a few instances they are located suspiciously near privies and sewer pipes. No sickness has been caused by the use of well water, except in those instances of contamination mentioned. No epidemic disease has been so caused. The well water is very "hard," contains mostly lime salt, but no nitrogenous organic matter or chlorides are found.

No diseases have arisen from the use of lead pipe, but one case of lead poisoning occurred from the use of a lead water tank for storage purposes.

There is one public bathing place, a natatorium; no published rules, being governed by the rules usual to such places.

There are no public drinking fountains.

Drainage and Sewerage.—The area included within the city limits is four square miles—2,560 acres. The area in the center of the city, seven blocks east and west and five blocks north and south—about 320 acres—is very closely built.

The surface drainage is good and adequate. No underground drains have been constructed to act exclusively for surface drainage. The sewers which carry off most of the surface drainage are placed at depths varying from two to eight feet below the surface. The eastern part of the city is not drained and the soil becomes saturated with water during the heavy rains in the spring-time.

In some parts of the city cellars are liable to overflow in the spring-time from heavy rains. Several cellars also contain water from poor drainage.

There is a sewerage system, which is a part of a regular plan. There are three outlet sewers discharging into Spring creek. The main sewer is 10 feet in diameter at the mouth; the Kelly branch is 4 feet in diameter at the mouth; the Allen street sewer is 5 feet in diameter at the mouth. These sewers are built of brick principally, the Kelly branch sewer having some stone. They are all tightly cemented. They are all circular in shape with the exception of the town branch, which is of an inverted U shape. These are all kept fairly clean by their flow. No artificial means used for freeing them from obstruction, it being unnecessary. Probably about one-sixth of the city is not sewered. About one-quarter of this area is built upon. The total length of the subsidiary sewers discharging into the outlet sewers is about 10 miles. The subsidiary sewers vary from 1 to 2 feet in diameter, of vitrified pipe, circular in shape, gradually increasing in size as they approach the outlet sewers. The surface drainage passes almost wholly into the sewers, their capacity being amply sufficient for such purposes except in storms of unusual severity. No attempt is made to utilize the sewage. The ventilation of the sewers is only by means of the manholes and inlets. Section 579, city code, is the only regulation concerning the drains which connect houses with drains. This regulation is very generally complied with. No trap is required in the course of the connecting drain. There is nothing compulsory about conveying house drainage to the sewer. In many cases the solid parts are removed by the scavenger; the fluid portions are either emptied into the privy vaults or are scattered over the ground. Often during the warm summer months, with a northwest wind, there are "rank" odors from the openings and inlets to the sewers.

Streets, Alleys and Public Grounds.—The average width of the streets is 80 feet, the sidewalks being generally 8 feet wide. All sidewalks are paved with either stone, brick or plank, stone being used exclusively in the business part of the city. There is no difference in healthfulness owing to the direction of the streets, but for comfort many prefer the west side of the streets running north and south, and the south side of east and west streets. The total length of paved streets is 20 miles; the material is principally red and white cedar blocks. The total length of unpaved streets is about 40 miles.

The character of the soil is rich black loam and some yellow clay. Frequently during the rainy season the streets become excessively muddy where there is no pavement. The roadways are thrown up in the center, and ditched on the side with culverts at the intersection of streets. Under-drains are not used. No wooden pavement has been in use for years. There are about 8 blocks of Macadam pavement built by the railroad companies along a portion of their roads in the city.

The streets are cleaned and sprinkled by the corporation. The results as to cleanliness are quite satisfactory. In the resident portion of the city shade trees are placed at the outer edge of the sidewalk, a grass plat intervening between the walk and roadway; these are planted in rows parallel with the street, soft and hard maples and elm trees predominating. Gas does not injure them. They have a beneficial effect upon health. Only when they are so thick as to afford such dense shade as to shut out the sunlight, thus causing the ground to be always damp. The individual property-owners care for these shade trees. There is, on the paved streets in the resident part of the city, a space of 15 feet on the outside of the sidewalk, which is laid in grass.

The alleys are generally 16 feet wide. Section 648 of the city code prescribes as punishment a fine for depositing ashes, manure or garbage in them. The cleaning of the alleys is done under the supervision of the superintendent of streets and alleys, and is seemingly satisfactory.

The city has one public park, which contains about 15 acres, located outside of the city. There is but one open square in the city, area about one acre.

Life is endangered by not having watchmen at the various railroad crossings; watchmen are needed at the crossings at 5th, 2d and 6th streets, also on Adams, Cook street, Grand avenue, Union, Jefferson and Carpenter streets. On an average, 3 or 4 lives are lost annually from such negligence. No accidents are recorded from street cars.

HABITATIONS.—There are about 4,300 dwelling houses within the city limits. Probably three-fifths of them occupied by their owners. The average occupancy is about 6.6. Quite a large number of the houses are occupied by two or more families. None are over tenanted as a rule; one or two are somewhat crowded, but no serious results have occurred from such over tenancy. There are no municipal regulations on the subject of over tenancy, no cause ever having been made for such.

No frame building is allowed to be erected within the fire limits. City code, sections 375–378, provides for the height and manner of constructing walls and ends. The regulations governing this subject are not enforced as they should be.

The following houses were recommended last year by the board of health to be condemned either as unsafe or unfit for habitation for sanitary reasons:

South Ninth street, second house from Washington, east side.
South Ninth street, third house from Washington street, east side.
South Ninth street, No 112.
South Ninth street, No. 114.
All these have rotten foundations, leaking and are filthy.
Jefferson street, between Seventh and Eighth streets, used as boot and shoe repair shop.
City calaboose, foundation rotten and walls filthy.
Rag house on North Sixth street, between Jefferson and Madison streets.
No. 709 Jefferson street.
No. 830 Madison street.
No. 822 Madison street.
No. 818 Madison street.
Madison street, south side, second house east side of Eighth street.
No. 804 Madison street.
No. 218 North Eighth street.
Madison street, north side, second house west of Tenth street.
No. 322 North Thirteenth street, dwelling house, bad condition, floor rotten, damp, etc.
No. 423 South Twelfth street, old, damp, and falling down.
No. 1306 Eleventh street, no foundation, two windows, leaking and rotten.
No. 1427 East Monroe street, no foundation, old, leaking, settled three inches below surface of ground.
No. 1707 East Capital avenue, no foundation, no floor, leaking and rotten.
No. 719 East Washington street, house overcrowded.
No. 723 East Washington street, house overcrowded.
No. 729 East Washington street, house overcrowded.
No. 318 North Second street, no foundation, damp, no ventilation, rotten.

Quite a number of dwelling houses are connected with the sewers, the majority having tight drains which are trapped. A few houses have cisterns or wells in the basements from which they derive water supply. No houses have privies in the cellars or basements.

Two-thirds of all the dwelling houses are isolated buildings with abundant yard room and clear space around them. Excepting the State House and other public buildings, there are no houses in which special arrangement is made for ventilation. As a rule, houses having neither basement nor cellar, are not properly raised from the ground and suitably arranged for sub-ventilation. More than one-half such houses are deficient in this respect.

The houses located in the parts of the city inadequately drained suffer from dampness and often have water standing in them. About one-quarter of the habitations only are furnished with the proper bathing facilities. Many use the cellars for storing fuel; some cellars in the business part of the city are used for ash receptacles, etc., but not in the resident portion.

No diseases have occurred which were attributable to overcrowding or unfitness of dwelling; some cases of sickness probably resulted from damp cellars. The fuel used does not seem to have any influence upon the health of the community. The ground under the basement is usually cemented, but basements are rarely used. No ill effects have been observed from arsenic paper in rooms of living apartments, and no bad effects from dyed wearing apparel have been observed beyond slight irritations and eruption folowing the use of aniline-dyed stockings.

Gas and Lighting.—The city is lighted by gas and electricity. The gas works are located on the northwest corner of First and Washington streets. Have never been complained of as a nuisance by the immediate residents. The lime process of purification is used and is quite satisfactory. The refuse is disposed of in the company's grounds. Gas is furnished for $1.50 per 1,000 cubic feet. The quality of gas, as to illuminating power, is good and quite satisfactory, being 18 candle power. No injurious effects on health have been observed except a few cases of asphyxiation which did not result fatally. No analysis has ever been made. The illuminating power of the gas is tested by a photometer at the works. All the streets are lighted, the majority with gas, and the remaining with gasoline lamps. Those alleys in which there are dwellings are lighted with gas. Probably one-half of the dwellings in the city are lighted with gas.

Section 270, city code, provides for an inspector of inflammable oils, etc., and sections 271, 272, 273, provide for his duties etc., according to the State law of 1874. Five accidents have occurred from explosions of these fluids within the past five years. No accident from the explosion of gas has occurred during that time. Water gas is not used.

The Fuller system of electric lighting is used, 120 burners being in operation. No injurious effects on health or eyesight have been noted.

Garbage and Excreta.—Sections 777 and 778, city code, relative to the removal of garbage, are quite uniformly complied with. No reference being made to the character of the receptacle for removing kitchen refuse. Garbage ashes, etc., are removed by private contractors; formerly the ashes were removed from around the business part of the city by corporation employés, the householder bearing the expense of such removal. The removal is made to a place designated by the street and alley committee or by the superintendent of streets and alleys. The removal takes place three or four times a week, ordinarily, during the summer months more frequently. Occasionally "slops" are used for feeding hogs. Many householders burn the solid parts of the refuse. The ultimate removal and disposition is generally promptly and satisfactorily performed; but in some instances the garbage becomes a nuisance by using improper receptacles for its deposit, and removing it in open barrels or boxes; and when it is fed to hogs, the pen will sometimes become so filthy as to be detected for quite a distance. There should be a regulation compelling scavengers to use close covered receptacles for removing garbage. Scavengers usually charge from five to ten cents each removal, while private parties frequently remove it for the garbage, using it to give to pigs. Quite a number of householders destroy all the solid refuse by fire.

All dead animals must be buried outside the city by the owner within twenty-four hours after death, unless removed by the city scavenger, who disposes of them to a rendering establishment north of town. No record of the number of dead animals so disposed of last year is obtainable. The manner of disposal, so far as burying, is satisfactory, but the rendering establishment is a nuisance to the immediate vicinity.

There are some 75 cess-pools at residences to which the wash-water from the kitchen and laundry is conducted. Many of these are tight, but a few porous and leaky. Where provided with an overflow, it sometimes, but not always, connects with a sewer; otherwise they are cleaned out by pumping. Flush tanks are but little used. Absorption drains under the surface of the soil are not used, except in very few instances. There are no city regulations as to the manner and methods of cleaning or constructing cess-pools.

About 10 per cent. of houses have water-closets which deliver directly to the sewer, with very few exceptions. Nearly nine-tenths of the houses depend entirely or partly upon privy vaults, only a small proportion of which are water tight; the majority are built very carelessly, the ordinance on this subject being disregarded. Sections 539, 540, 541, city code, are very plain and explicit regarding the construction and cleaning of such vaults. A small number of privy vaults are connected with the sewers. No cases where direct and positive contamination of cistern or well from privy vaults have occurred, although several very suspicious ones have been condemned, the suspicion being caused by the close proximity of well and privy. The dry earth system is used to only a very limited extent.

MARKETS AND FOOD SUPPLY.—There are no regular market houses. The supply of fresh meat as to quantity and quality is good. No meat or fish has been condemned by the inspectors during the past year. Meats and vegetables come from the immediate vicinity of the city. About 25 per cent. of the fowls are brought and sold to customers alive.

The supply of vegetables and fruits as to quantity and quality is fairly satisfactory, the greater portion coming from the vicinity of the city. No fruits or vegetables were condemned by the inspector within the past year.

The traffic of hucksters and peddlers is regulated by ordinance; those selling produce of their own production do not have to pay a license; otherwise they are licensed. Section 255, city code, provides against the offering of any unwholesome food for sale, but the ordinance is not enforced. No facilities, as sheds or stands, are afforded to producers.

The greater portion of the milk supply comes from grass fed cows, and is of good quality; some of the dairy cows are fed on malt refuse from the brewery. No cases of poisoning or acute disease have occurred caused by unwholesome articles of food, canned meats, etc. No prosecutions for violations of the State laws concerning adulteration have occurred. No bogus articles as oleomargarine or analogous substance is now offered for sale in lieu of butter.

SLAUGHTER HOUSES AND ABATTOIRS.—Animals for city consumption are obtained from farmers and stock raisers in the immediate vicinity. About 14,000 animals are slaughtered annually for house use. Within recent years more have been slaughtered for shipment. No inspection of the animals intended for market is made either before or after slaughtering. No observations of diseases rendering the flesh of animals unfit for food have been made. No condemnation of meat has occurred here.

The slaughter houses are erected at private expense. Section 524, city code, governs the establishment of slaughter houses and the business of slaughtering and packing. The business is scattered—each butcher having his own private establishment, and all being outside the city limits. The drainage from these establishments goes into open ravines, but not through any part of the city. These places during the hot months of summer, are a nuisance to their immediate neighborhood because of the filthy condition in which they are allowed to get.

Tallow and fat is rendered by steam and packed for shipment; blood and animal refuse is fed to hogs which are kept for the purpose. There are no regulations to protect the public from any nuisance which may come from this practice.

MANUFACTORIES AND TRADES.—A paper mill located in the city, in a well selected portion, creates a nuisance by the disagreeable odor produced in the manufacture of paper. The slaughtering houses alluded to above—and a rendering and soap factory—located northwest of the city are also nuisances during the hot season of the year. The paper mill above mentioned produces very disagreeable but not noxious vapors. None producing disease in the workmen.

In some of the manufactories women are employed, but they are not known to be subject to diseases caused by their occupation. The hours of labor in the factories are from 7 to 12 and from 1 to 6—one hour, 12 to 1 for the noonday meal. No children under the ages of 15 or 16 are employed in the factories—their hours of labor are the same as for adults. Their employment does not seem to interfere with or injure their health. The cubic space and ventilation in the rooms occupied by working people are generally satisfactory. No diseases (or impared physical condition) due to insufficient air supply, have been observed; the privy and water closet arrangements in manufactories, etc., are usually satisfactory.

Hospitals and Public Charities.—The hospitals and charitable institutions of Springfield are: St. John's Hospital—corner Eighth and Mason street, has 87 beds, governed by the Sisters of St. Francis; Wabash Railroad Hospital—Sixth and Douglas street, has 37 beds and is governed by the Wabash Hospital system; the Home for the Friendless—Seventh street and South Grand avenue, has 26 beds and 10 cradles, governed by a board of managers; Episcopal Orphanage—Adams street between Second and Third streets, has 13 cradles, governed by some branch of the Episcopal church. There are no free dispensaries in the city. The hospital accommodations are sufficient for the present wants of the city. The city gives nothing directly to public charities, but Springfield township through its supervisors expends annually about $6,500 for charity, not including the salary of city physician and other regular expenditures. The system is satisfactory.

One physician is employed to attend the city poor—employed by the county board of supervisors, at a salary of $600 per annum and furnishes his own medicine. There is no ambulance system, but the police patrol wagon acts in such capacity when required.

Police and Prisons.—The police force is organized under the city charter, and numbers twenty men. The members act as inspectors of nuisances. There is a night patrol composed of ten men; there are also two men on night patrol known as "merchant police."

There is one temporary lock-up or calaboose in which both sexes are confined. Average daily occupancy, 10. The air space for such occupancy is about 300 cubic feet per capita; for maximum occupancy, 83 cubic feet. Dimensions of cells per single prisoner 6x3x8. Vagrants are kept separate from the prisoners. Ventilation is by the windows. The water closets in use are not satisfactory. Prisoners needing a bath upon entrance are given a washing with the hose, and thereafter as often as necessary.

The city physician attends the prisoners. The sanitary arrangements are poor. The building is old and about to fall down; has been repeatedly condemned; it would be impossible to render it sanitary. There is no police surgeon; no ambulance system. Persons found insensible from drunkenness, illness, injuries, etc., are removed in the patrol wagon to the hospital and medical aid summoned.

There is one jail in the city, belonging to Sangamon county; its average occupancy, 40. The single cells measure 5x7x6½ feet. They are heated by steam radiators in hall and ventilated by windows in hall and ventilators in the walls. No reports of these institutions have ever been printed. No epidemics have ever occurred among the prisoners. The diet is good and sufficient. No occupation is provided the prisoners in the jail; those in the calaboose are sometimes put to work on the streets.

There are about 30 recognized houses of prostitution in the city and about 250 prostitutes. No license system has ever been tried.

There are 110 places in the city at which intoxicating drinks are sold to be drunk on the premises, 5 of these being beer halls and 2 beer gardens. The amount of malt liquors consumed in the city per annum is about 25,000 barrels; of distilled spirits consumed per annum, 1,320 barrels. During the past year there were about 500 cases before the police magistrates for drunkenness.

Fire Establishments, Etc.—The fire department is organized under the incorporation act of 1882. It is a paid organization. No fire alarm or police telegraph in operation, but the telephone is used and answers the purpose. There is no insurance patrol. There are two steam fire engines, one hook and ladder truck, and two hose carriages. The water for fire purposes is obtained from the mains of the water works company; not as abundant as it should be. Fire extinguishers are quite generally provided in manufactories, large buildings and public places.

The expense of the fire department last year was $15,901.57. The number of persons employed, 21. Sleeping apartments are furnished for the men at the engine houses; they provide their own subsistence.

The loss of life from fire last year was one. The loss of property was $12,637.50. There were three fires caused by the use of dangerous and unfit fluids for lighting purposes; fifteen caused by defective construction, smoking, matches, fireworks, etc.; none from spontaneous combustion; eight of incendiary origin.

Sections 414–420, city code, regulate the storage of gunpowder, nitro-glycerine, dynamite and coal oils. Sections 270–277, city code, govern the inspection of illuminating oils, but are not enforced. The law provides that no frame building shall be erected within the fire limits. The State law requiring the doors of public buildings, churches, school-houses, theatres, hotels, etc., to open outwards, is not complied with.

CEMETERIES AND BURIAL.—There are two cemeteries within the city not now used; many of the bodies interred therein have been removed. Near the city are Oak Ridge and Mt. Calvary cemeteries. In Oak Ridge cemetery there are 7,007 graves and about 275 annual interments. The number of graves in Mt. Calvary not ascertained.

It is not proven that the subsoil drainage from the land containing graves contaminates springs, wells or water courses, although the sexton of one of the cemeteries gave up his position because he believed his health to be affected by such contamination.

The average depth of graves is 6 feet; nature of soil, clay and usually dry at that depth. Vaults are sometimes used, but not generally, principally built of brick with stone covering. No data concerning the rapidity of decay in the vaults; in the graves it is about 7 years.

No nuisances or evil effects have been observed arising from the cemeteries. Public funerals of persons dying of contagious diseases are discountenanced, but there is no city regulation on the subject. There is a receiving vault so managed that it never has become a nuisance. Burial permits are required.

PUBLIC HEALTH LAWS, REGULATIONS, SANITARY OFFICIALS.—The Springfield board of health was organized in 1882, exercises general supervision over the public health of the city. It is a special board, with the mayor, city clerk and superintendent of police ex-officio. The other members composing said board are selected by the mayor, with the advice and consent of the city council. The board is composed of seven members; term of office one year; no pay or emoluments. The members composing the present board are all physicians. The board has no executive health officer. The chief health officer is appointed by the mayor; usually selected from the police force. There are usually three or four sanitary inspectors appointed for duty during the summer months, none of whom are physicians. Only the chief health officer is vested with police powers. The entire city is inspected once a year, and nuisances are then ordered abated.

The board nominally meets once a month, subject to the call of the mayor. Sections 217—228 define and specify the powers and duties of the board. It has power, independent of the city council, to make and enforce ordinances, only in time of declared epidemics. It has authority to both abate and define nuisances. The board takes little cognizance of defective house drainage and of defective sewerage, only to make recommendations for sewers to the city council. Very little attention has been paid to the private water supply, but of the public supply it has suggested means for removing the contamination. Only takes action in regard to cess-pools and privy vaults when attention is called to such matters. The removal of garbage and the cleaning of private premises are left almost entirely with property-owners. The condition of the streets as to cleanliness is a matter left with the street and alley committee of the council.

The board enforces the ordinance on the method of burial. Small-pox is the only contagious disease in which isolation is practiced, and it is quite thoroughly enforced. The board has power to remove persons sick with contagious diseases to special hospital; this is done whenever it is necessary. School children must be vaccinated before being allowed to enter any of the public schools.

For the further restriction of contagious and infectious diseases the board orders placards placed where such diseases are prevailing; also the thorough disinfection of the place and apparel pertaining to patients.

The board registers no vital statistics. The mortuary report shows street, and number of house; births, marriages and deaths become matters of record through the county clerk's records. Deaths are recorded at the city clerk's office, the latter issuing burial permits only on death certificate being filed. The board makes no reports concerning mortality or records of death.. A burial system recommended by the STATE BOARD OF HEALTH for the cause of death, is in force, and no burial may be made without a permit issued under supervision of the health authorities. These regulations are thoroughly complied with.

Cases of small-pox and other malignant infectious diseases are required to be reported to the local board of health. The following diseases have been epidemic in Springfield, but the mortality record can not be obtained. In 1832, cholera; diphtheria in 1874-75; typhoid fever in 1881-82; in 1881-82, small-pox—15 deaths; scarlatina in 1884, light. From the records in the county clerk's office the following statistics of mortality have been compiled:

Deaths from—	Year.	Jan....	Feb....	March ..	April ...	May....	June ...	July....	Aug....	Sept....	Oct	Nov....	Dec....
Malarial fever..........................	1875	1	1	....	....	....	....	...	....	1	....	....	....
	1876	....	....	....	....	....	....	....	....	1	3	1	....
	1877	....	....	....	....	....	....	....	....	....	2	....	....
	1878	....	....	1	....	....	....	....	....	2	....	....	....
	1879	....	....	....	....	....	....	....	....	1	....	....	....
	1880	....	....	....	....	....	....	....	....	2	....	....	....
	1881	....	....	....	....	....	....	....	3	2	1	....	....
	1882	....	....	....	1	....	....	....	....	....	1	....	....
	1883	....	....	....	....	....	....	....	....	1	....	....	....
Typhoid fever.........................	1875	....	3	....	....	....	....	....	1	....	1	....	....
	1876	....	1	....	....	....	....	1	....	....	2	....	1
	1877	3	1	....	2	....	....	....	5	1	1	2	....
	1878	....	....	1	1	....	2	....	3	3	....	1	....
	1879	1	....	1	1	1	....	....	1	....	1	....	....
	1880	....	1	1	1	....	....	....	2	3	1	2	....
	1881	....	2	3	2	1	1	....	4	5	9	8	....
	1882	3	5	2	2	2	2	1	3	1	2	3	3
	1883	2	....	1	....	2	....	....	....	2	4	....	1
	1884	2	....	....	....	....	....	2	....	....	3	....	2
Cerebro spinal fever....................	1875	1	1	....	....	....	....	....	....	....	....	....	....
	1878	....	....	....	1	....	....	....	....	....	....	....	....
	1881	....	....	....	3	....	....	....	....	....	....	....	....

Mortality—Continued.

Deaths from—	Year.	Jan	Feb....	March...	April .	May.....	June....	July	Aug....	Sept	Oct	Nov	Dec....
Erysipelas.	1875	....	....	1	....	....	....	....	....	....	1	....	....
	1876	....	....	1	1	....	....	....	....	....	....	....	....
	1877	....	....	....	1	....	....	....	....	....	....	....	....
	1879	....	2	....	....	....	....	....	....	1	....	....	....
	1880	....	....	....	....	....	....	....	....	....	....	1	....
	1883	....	....	....	....	....	....	....	....	....	....	1	....
Dysentery.	1875	....	....	....	....	1	....	....	5	1	2	....	....
	1876	....	....	....	....	....	....	2	2	....	....	....	....
	1878	....	....	....	....	....	....	....	1	....	....	....	....
	1879	....	1	....	....	....	....	....	1	....	....	....	....
	1880	....	....	....	....	....	1	....	1	1	1	....	....
	1882	....	....	....	....	....	....	....	....	1	1	....	....
	1883	....	....	....	....	1	....	1	....	....	....	....	....
	1884	....	....	1	....	....	....	....	....	....	....	....	....
Diarrhœa	1875	....	....	1	....	....	....	11	6	1	....	1	....
	1876	....	....	1	....	1	....	8	4	2	3	1	....
	1877	....	....	....	....	....	....	5	6	3	....	....	....
	1878	....	....	....	....	....	....	4	5	1	....	....	....
	1879	....	....	....	....	....	....	2	3	....	....	....	....
	1880	....	....	....	....	....	7	9	6	1	....	....	....
	1881	....	1	....	....	1	....	15	6	3	3	....	....
	1882	....	....	....	....	....	....	4	2	1	2	....	....
	1883	....	....	....	....	....	....	4	7	3	....	....	....
	1884	....	....	....	....	1	....	1	10	8	5	....	....
Scarlatina.	1876	1	5	2	1	2	....	....	2	....	....	1	....
	1877	3	5	1	1	....	....	1	2	1	2	....	1
	1878	....	....	....	....	....	....	....	4	1	....	1	....
	1879	....	....	....	2	....	2	8	2	6	5	9	12
	1880	2	1	3	6	6	4	2	....	1	2	2	1
	1881	1	....	1	....	....	....	....	....	....	..	...	....
	1882	....	1	....	....	....	....	....	1	....	....	....	....
	1883	....	....	2	....	....	....	....	....	....	....	....	....
	1884	....	....	....	....	....	....	....	....	....	1	....	....
Diphtheria.	1875	....	1	....	1	....	1	1	3	2	7	5	6
	1876	2	2	....	....	....	1	....	....	1	....	1	....
	1877	....	1	....	....	....	....	1	....	....	....	1	1
	1878	1	....	2	....	....	....	....	....	3	2	3	2
	1879	1	1	....	1	....	...	....	....	...	....	1	....
	1880	2	....	....	....	....	....	....	2	....	1	1	1
	1881	....	....	....	....	....	....	....	....	1	....	....	....
	1882	1	....	1	....	....	....	....	....	....	....	....	1
	1883	1	....	1	1	....	....	....	....	....	....	....	1
	1884	2	2	....	2	....	....	....	1	....	1	2	....
Croup.	1875	....	....	....	....	....	....	....	....	....	1	3	....
	1876	2	....	....	2	....	....	....	....	2	1	2	1
	1877	....	1	....	....	....	...	....	....	....	....	....	....
	1878	....	....	....	....	1	....	....	....	1	2	1	2
	1879	3	2	....	1	....	....	....	....	....	....	3	....
	1880	2	....	....	....	....	....	....	....	....	....	....	....
	1881	....	....	....	....	....	....	....	....	....	....	....	4
	1882	1	1	2	....	1	....	....	....	....	3	1	2
	1883	....	....	....	1	....	1	....	....	....	....	....	1
	1884	4	....	....	....	....	....	....	....	....	....	....	....
Measles.	1876	1	....	....	3	1	....	1	1	....	....	....	....
	1877	....	....	....	1	....	....	....	....	....	....	....	....
	1879	....	....	....	....	1	....	....	....	....	....	....	....
	1880	....	....	....	....	....	1	1	2	....	....	....	....
	1881	....	1	1	2	....	....	....	....	....	....	....	....
	1884	....	....	....	....	1	....	....	....	....	....	....	....

Mortality—Continued.

Deaths from—	Year.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Whooping-cough	1875	....	....	1	....	....	....	....	....	....	....	....	....
	1876	1	....	....	1	....	1	1	....	1	....	....	....
	1877	....	....	....	....	....	1	4	1	....	1	....	....
	1878	....	....	....	....	....	....	1	1	....	....	....	....
	1880	....	....	....	....	....	....	....	....	1	1	....	....
	1881	....	1	....	2	....	....	1	1	....	....	....	....
	1883	....	....	1	...	....	....	1	....	....	....	....	....
	1884	....	1	1	....	....	....	....	1	....	....	....	....
Pneumonia	1875	4	5	3	5	....	1	1	1	....	2	....	....
	1876	1	1	4	1	....	....	....	....	....	1	2	3
	1877	2	1	2	5	1	2	1	1	1	1	....	1
	1878	....	....	2	1	3	1	1	....	....	...	1	2
	1879	3	3	1	3	....	....	1	....	....	2	4	3
	1880	....	1	6	3	1	....	....	....	....	2	6	4
	1881	....	4	3	6	1	....	....	1	....	1	....	....
	1882	2	1	4	1	....	1	....	....	....	1	1	2
	1883	2	4	5	3	1	2	2	....	....	....	....	2
	1884	4	5	1	2	....	....	1	....	....	....	....	....
Pleurisy	1880	....	1	....	....	....	....	....	....	....	....	....	....
	1881	....	1	....	....	....	....	....	....	....	....	....	....
Phthisis	1875	5	4	3	1	4	4	3	2	3	4	2	2
	1876	1	1	4	4	4	1	5	1	2	1	1	2
	1877	5	3	1	3	4	1	3	6	4	2	3	1
	1878	1	4	1	2	6	2	4	7	10	3	3	3
	1879	1	5	2	5	4	....	4	3	2	2	3	3
	1880	....	4	4	7	5	5	2	1	1	1	6	2
	1881	5	4	2	2	7	4	3	6	5	3	5	3
	1882	5	3	2	7	5	4	5	2	2	4	4	1
	1883	....	4	4	3	5	3	6	3	1	4	2	4
	1884	1	3	7	4	2	3	2	6	1	....	6	4
All other diseases of the lungs	1875	....	2	....	2	1	1	1	....	2	2	2	2
	1876	2	....	....	....	....	....	1	3	....	....	2	1
	1877	2	2	....	2	....	1	....	1	....	1	1	....
	1878	....	1	1	2	....	....	....	....	3	1	....	....
	1879	....	....	....	1	1	....	....	....	2	....	1	....
	1880	....	....	....	1	1	2	2	....	....	3	....	1
	1881	1	3	1	2	1	....	....	1	1	....	1	2
	1882	3	....	4	1	2	....	....	1	1	1	....	....
	1883	....	....	2	2	....	....	....	....	....	2	....	....
	1884	1	2	3	5	2	....	....	....	2	2	1	....
Diseases of the heart	1875	....	....	....	1	....	....	....	2	1	....	1	1
	1876	1	1	2	....	2	....	....	....	....	....	....	3
	1877	....	1	1	....	3	1	....	....	1	2	1	....
	1878	3	....	....	....	2	....	....	....	....	1	1	5
	1879	....	....	1	....	....	2	1	1	....	....	....	....
	1880	....	2	1	4	1	....	1	1	1	....	1	1
	1881	1	1	....	....	2	1	1	1	3	1	....	1
	1882	3	....	....	1	1	....	1	1	3	....	....	....
	1883	....	2	2	....	1	....	1	1	2	....	2	3
	1884	2	1	2	....	....	....	1	....	....	1	2	2
Diseases of the urinary organs	1875	1	....	....	1	1	1	....	....	....	1	....	1
	1876	....	....	1	....	....	....	....	....	....	1	1	....
	1877	1	1	....	....	1	....	....	....	....	....	....	....
	1878	....	1	1	....	....	....	1	....	....	....	....	1
	1879	1	1	1	....	....	....	1	....	....	....	....	1
	1880	....	1	....	....	1	2	....	....	....	....	....	....
	1881	1	1	....	....	1	....	....	....	....	1	....	....
	1882	....	....	1	....	1	....	1	....	1	....	....	....
	1883	2	1	1	1	1	1	1	1	1	....	....	1
	1884	....	....	....	....	....	....	1	....	1	1	1	....

Mortality—Continued.

Deaths from—	Year.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Apoplexy	1875	....	1	....	....	....	....	....	1	....	....	....	....
	1876	....	1	....	....	....	....	....	....	....	....	....	1
	1877	....	....	....	....	....	....	....	....	....	1	....	....
	1878	....	1	....	....	....	1	1	....	....	....	....	....
	1879	....	....	....	....	3	....	....	....	....	....	....	....
	1880	1	....	1	....	1	....	....	....	....	....	....	....
	1881	....	....	....	1	....	....	1	....	....	....	....	....
	1883	....	....	....	....	....	....	1	....	....	1	1	....
	1884	....	....	....	1	....	....	....	....	....	....	....	....
Tetanus	1878	....	....	....	....	....	....	....	....	1	....	....	....
	1882	....	...	....	....	....	....	....	....	1	....	....	....
Puerperal diseases	1875	....	....	....	1	....	....	....	....	....	....	....	....
	1876	....	....	1	....	....	....	....	....	....	....	....	....
	1877	....	1	....	....	....	....	....	1	....	....	....	....
	1878	....	....	....	1	....	1	....	....	....	....	....	....
	1879	....	....	....	....	....	....	3	....	....	....	....	1
	1880	....	1	....	....	1	....	1	1	....	....	....	1
	1882	....	....	....	....	....	....	....	1	....	....	....	....
	1883	1	....	1	....	1	....	....	....	....	....	....	....
	1884	....	1	....	....	....	....	1	....	....	...	....	....
Deaths of children under one year of age	1876	....	....	7	5	3	5	14	8	4	9	7	2
	1877	3	5	3	5	3	7	10	13	7	6	1	2
	1878	....	1	4	5	4	3	8	10	12	2	4	3
	1879	5	7	1	4	7	3	7	2	5	6	3	2
	1880	5	2	8	5	4	13	16	9	4	7	7	5
	1881	7	7	6	6	3	4	23	10	13	6	1	3
	1882	7	5	8	6	5	7	11	6	6	10	2	4
	1883	5	4	9	6	4	5	7	6	4	1	6	4
	1884	7	6	6	5	3	2	2	12	8	7	3	2
From one to five	1876	....	....	3	4	3	1	3	5	8	4	7	....
	1877	4	6	3	3	3	1	5	8	3	6	3	3
	1878	2	....	5	2	2	1	4	7	4	3	3	2
	1879	4	4	3	3	1	4	7	4	5	3	7	4
	1880	3	1	2	5	5	4	4	5	5	1	4	2
	1881	2	2	6	5	3	....	4	8	5	4	1	4
	1882	8	2	2	2	3	3	1	3	2	5	1	4
	1883	6	6	3	5	4	2	8	4	5	3	2	3
	1884	3	4	....	3	3	6	1	5	2	3	2	2
From five to fifteen	1876	....	....	1	2	2	2	....	2	....	2	1	1
	1877	....	1	1	2	2	1	....	3	1	4	1	1
	1878	1	....	2	....	1	2	....	8	1	5	2	1
	1879	2	1	2	2	1	5	2	....	5	2	7	8
	1880	2	1	2	6	1	2	2	4	1	7	2	....
	1881	2	3	3	4	2	1	1	5	2	2	1	4
	1882	2	....	2	....	....	2	2	....	1	3	3	2
	1883	1	1	5	1	3	1	5	1	2	1	....	4
	1884	1	1	1	3	2	1	2	....	2	4	2	1
Still births, including abortions at all periods of utero-gestation	1875	....	2	3	1	3	....	6	1	....	3	3	2
	1876	1	4	3	....	1	2	1	....	1	....	1	2
	1877	....	2	1	1	1	1	....	3	2	2	2	....
	1878	1	....	1	2	....	1	2	2	2	2	1	....
	1879	....	1	1	2	4	....	2	1	3	3	1	2
	1880	4	1	6	2	....	3	3	1	....	4	....	3
	1881	2	....	1	1	....	2	2	3	3	2	2	1
	1882	4	2	3	4	1	4	2	4	1	5	3	1
	1883	2	1	4	2	1	5	3	....	2	1	2	1
	1884	1	2	1	3	2	4	2	3	5	1	....	....

Malarial diseases are much less prevalent than formerly, while zymotic diseases prevail much more extensively. Immigrants from abroad suffer from the climatic changes only to a limited extent—malarial affections principally.

MUNICIPAL SANITARY EXPENSES.—The city council appropriates about $1,000 annually for use of the board of health for sanitary purposes. The appropriation for sewerage last year was $20,000, and was exceeded in the expenditures by $1,035.24. The paving money comes out of the improvement fund, and is largely raised by assessments upon abutting property. The total expenditures last year for paving were $169,278.38, of which amount individual property owners contributed $137,769.14. The street cleaning appropriation last year was $5,000, and the expenditures for this purpose were $5,638.47. For the erection of public buildings the sum of $5,188 was spent. The total municipal expenses during the year were about $75,000.

PUBLIC SCHOOLS.—The total number of scholars registered in the public schools is 3,190; the average number in attendance, 2,675. Pupils under 8 years of age are confined in the room from one to one and a half hours, and to the seat without change from 20 to 25 minutes. The experience of Prof. F. R. Feitshans, recently deceased, is in favor of a session of four hours with recess. In some grades classes stand during recitations, but in all cases the individual scholar stands while reciting, Scholars study in the evening about one hour in the ward schools, and usually about two hours in the high school.

The time devoted each day to outdoor exercise and recreation is one hour and forty minutes. Holidays are: Thanksgiving day, usually two days; Christmas time, two weeks; spring-time, one week. School closes about the 12th of June for three months. Exercise in the open air is compulsory in fair weather. Competition is a feature in the course of instruction only so far as it effects the scholar's class standing, the whole class partaking in the competition. The sexes study and recite together. Moral and corporal punishments are inflicted.

All pupils must be vaccinated before receiving permission to enter school. This regulation was instituted in 1872 and is rigidly enforced. No cases of small-pox have occurred among the scholars or teachers since vaccinal protection was made a condition of admission. Scholars from families in which contagious or infectious diseases are prevailing are not allowed to attend school, nor afterwards without a physician's certificate that all danger of contamination is passed. From 80 to 85 per cent. of absences of pupils is due to sickness, as shown by the parents' "excuses."

THE SPRINGFIELD HIGH SCHOOL.—Is located on the southeast corner of Fourth and Madison streets; soil, black loam with a clay substratum; drainage is very good now; built of brick and stone about 25 years ago, is three stories and basement, with seven school rooms having 281 sittings. The building is heated by steam to a temperature of about 68° F. in the rooms in winter. The rooms are ventilated by window ventilators during the seasons when heat is used, and is satisfactory. The basement is used for water closet purposes and also for the heating apparatus and for fuel. The water is obtained from the city water works and from wells in the yards, and to appearances and taste is good, although there is a privy in the yard in foul condition. The rooms are quite well lighted; the average number of square feet by which light enters each room is about 150. No opportunity for exercising during inclement weather is afforded; the basement is unfit for such purpose and the other parts of the building are occupied. In the girls' side of the basement arrangements are made for drying clothes that are wet. The play-grounds are about 65x115 feet, cinder bed, small shade trees but no seats; no gymnastics outside; some rooms have the "free hand gymnastic exercise" once a day. Janitors are appointed to look after each building, taking care of the grounds, flushing and cleaning the sewers, removal of the excreta, etc. Andrews' single desks are used almost exclusively in the city schools with satisfaction.

In addition to the high school building, which is situated in the seventh ward, there are nine others. The Palmer school in the first ward, is situated on Madison street, between Twelfth and Thirteenth streets. The area of the grounds is 320x157 feet. The building is of brick, two stories, has nine rooms and 430 sittings. The McClernand school, in the second ward, situated on Sixth street north of Enos avenue; area of grounds 300x160 feet. Building of brick, two stories; has 8 rooms and 420 sittings. The Douglas school, third ward, situated on Mason street, between First and Second; area of grounds 350x157 feet. Building of brick, two stories; has 12 rooms and 540 sittings. The Enos school in the third ward, corner of Calhoun and Bond streets; area of grounds 400x150 feet; building is of wood, has 2 rooms and 100 sittings. The Edwards school, fourth ward, corner of Edwards and Spring streets; area of ground, 320x414 feet; brick, two stories; has 7 rooms and 460 sittings. The Stuart school, fifth ward, on South Grand avenue, between Sixth and Seventh streets; area of grounds, 340x320 feet; brick, two stories high; 8 rooms and 420 sittings. The Lincoln school, sixth ward, on Capitol avenue, between Eleventh and Twelfth streets; area of grounds, 240x157 feet; brick, two stories; 11 rooms and 480 sittings. The Feitshans school, sixth ward, corner of Fourteenth and Clay streets; area of grounds, 300x300 feet; wood, one story; 2 rooms and 100 sittings. The Training school second ward, corner of Enos avenue and Sixth street; area of ground, 154x160 feet; two stories; 5 rooms and 125 sittings.

Sanitary Survey of Streator.

By C. D. Chalfant, M. D.

Location Population and Climate.—Streator is a mining and manufacturing town in LaSalle county, near the center of the southern boundary line of the county; latitude 41 deg. 10 min. north, longitude 88 deg. 45 min. west. It lies on the east bank of the Vermilion river, about 20 miles from the confluence of that stream with the Illinois. Although not on any through line, it has direct railroad connection with all the important lines of the State.

The town was founded in 1860. Its population in 1870 was 1,900; in 1880, 5,000. Its present population (1887) is 10,914, and with its immediate suburbs, about 15,000. The population under 5 years of age is 2,117. Natives and foreigners are about equally divided, the Europeans numbering about 5,000. There are 5 negroes and 6 Asiatics. No meteorological observations have ever been recorded in the city.

Topography.—The country surrounding the city is quite level. With the exception of a few low bluffs along the Vermilion river, there are no hills or mounds in the vicinity, and no marshes or low, moist lands. The city healthfulness may be modified by proximity to the river, which lies to the south and west. It is bordered by forest lands along the river and by market gardens and farms on all sides.

The site of the city is level and its original conformation has not been changed, but the water courses have been diverted, covered and modified to some extent. The average elevation of the city above sea level is about 600 feet. General surface slope is southeast. No part of the city is made land, other than the filling of lots from cellars when new houses are erected.

The Vermilion river passes near the city. Its width is from 50 to 100 feet; depth, 2 to 3 feet; medium velocity. Sides of stream are very steep and in times when amount of water changes does not expose much width of shore. The exposed shore ground is hard. The water is foul, caused by pumping from coal mines. The bed of the stream is not subject to deposits of organic matter or of silt. Bottom of stream is largely rock, and does not expose shoals or flat places. There are no natural or artificial falls of water in or near the city, nor any canal or race. Surface drainage enters sewers and they discharge into the river below city. There are no bodies of water within or near inhabited portions of the city, and no part of the city is subject to overflow or saturation of soil in the times of heavy rains. Height of water in wells not affected by it.

The city is located on the glacial drift underlaid by the lower coal measures. The underlying strata in order of succession from above downwards are, for first 100 feet:

Drift	20 feet
Soapstone blue	30 "
Coal No. 7	5 "
Fire clay	10 "
Sandstone	23 "
Soapstone	17 "

The drift is clay interstratified locally with sand and gravel. The dip of the strata is southeast.

Malarial effects have been observed when the surface soil was disturbed. There are numerous continuous fissures in the rock and gravel streaks through which soil water flows. No diseases are believed to be due to the soil or geological formation; nor has the spread of any epidemic followed the direction of the flow of underground water.

Water Supply.—The chief source of water supply is water works supplied by springs; distributed by Holly system with standpipe. The immediate gathering ground from which the water is drained is not manured at all with night soil or other excrement. The water is brought a distance of four miles in iron pipes, the capacity of the conduit being 4,000,000 gallons daily. The water is accumulated in reservoir at the works, holding 8,000,000 gallons and at the standpipe holding 2,000,000 gallons. It is filtered through gravel. The works have been but recently erected and the daily amount of water used now is 125,000 gallons, being an average of 34 gallons to each inhabitant. About 5,000,000 gallons are in store at all times for use in case of fires. The chemical analysis of the water is as follows:

Free ammonia, 0.06 parts per million.
Free ammonia, grains per U. S., gallon 0.035.
Albuminoid ammonia, 0.08 parts per million.
Albuminoid ammonia, grains per U. S., gallon 0.0046.
Nitrogen of nitrates, 0.37 parts per million.
Nitrogen of nitrates, per U. S., gallon 0.0216.
Chlorine of chlorides, 7,000 parts per million.
Chlorine of chlorides, grains per U. S., gallon 0.4083.
Hardness, Clarks scale, 29°.

The water has never been offensive in taste or odor at any time.

There are 112 fire plugs. No artesian wells. Three-fourths of the inhabitants depend upon wells and cisterns for their water; character of soil is clay; usual depth of wells to bottom is 15 to 20 feet, to surface of water, 10 to 15 feet. The wells and cisterns are not all located so as to be free from cess-pool or privy contamination, but are often in close proximity and the privies are deep, contents are allowed to accumulate and tight vaults are unknown. The well water has been occasionally productive of sporadic sickness. No diseases have arisen from the use of lead pipes.

There are no public baths. Two public drinking fountains are to be erected.

Drainage and Sewerage.—The area included within the city limits is 690 acres, about 40 acres being closely built up. The surface drainage is good, flowing into the Vermilion river and Prairie and Coal Run creeks. Underground drains have been constructed to act exclusively as such. They are placed at a depth of 16 feet, rate of fall one foot in 600 feet.

There are no swamps, areas of made land, or places saturated with water in or near the town. A few cellars are liable to intrusion of soil water in time of heavy rains.

There is no system of sewerage. There are six outlet sewers, discharging into the Vermilion river and into Coal Run creek; diameter at mouth one foot eight inches to three feet six inches. They are constructed of brick or stone laid in cement; are circular in shape and are kept fairly clean by their flow. Artificial means are not used. All of the city is drained, about one-half with these sewers.

Three-fourths of the city area is built upon. The total length of subsidiary sewers discharging into outlet sewers is 10 miles. These sewers are mostly of circular glazed sewer tile, but three of them are egg shaped. Surface drainage passes mainly into sewers. Their capacity is sufficient for six inches of rainfall in 24 hours. No attempt is made to utilize the sewage. Sewers are not ventilated and odors are seldom perceptible from the sewer openings.

STREETS, ALLEYS AND PUBLIC GROUNDS.—The general width of the roadways is 50 feet; of sidewalks five to 14 feet. The latter are paved with plank, brick and stone. Streets do not differ in healthfulness or comfort owing to direction. Streets are not paved. Length of streets 26 miles. Character of soil, clay with sub-soil of clay and sand. Streets are not unduly wet in the spring of the year.

Roadways are graveled high in center sloping down toward sidewalks. Most of them are tiled, having two inlets to each block. The cleaning and watering of streets is reasonably satisfactory.

Shade trees, mostly maple, are planted along edge of sidewalks. Gas does not injure them. No observations as to trees having any direct effect upon public health. They are cared for by individuals. No portion of the sidewalk or roadway is laid down in grass.

General width of alleys is from 16 to 20 feet. Regulations forbid the deposit of manure, ashes and garbage therein, and if so deposited, must be removed by property owner at his own expense.

There is one public park belonging to the city, 706x666 feet. It is within the city limits, and kept in good condition. It has no public fountain or urinals, nor are there areas for or sources of amusement provided therein.

Life is endangered by lack of sufficient watchmen at railroad crossings, and a number of accidents have occurred at said crossings during the past five years. The city has no street railroads.

HABITATIONS—There are about 2,000 dwelling houses within the city limits, three-fourths of them being inhabited by their owners. The average occupancy is about five. There are but very few tenement houses occupied by two or more families. There are no municipal regulations concerning over-occupancy.

About 10 blocks of the central part of the city is denoted the "fire limits," and in which all buildings erected must be of brick, stone or iron, with metal roof. This regulation is enforced.

No houses were condemned as unsafe last year, and none as unfit for occupancy owing to sanitary reasons. But few houses have connection with sewers, or have wells or cisterns in their basements, and none have privies therein.

Nearly all dwellings are isolated buildings, having clear space all around them. None of them have special arrangements for ventilation. Houses having neither basement nor cellar are usually raised from the ground sufficiently to allow of sub-ventilation. The cellars and basements of a few business buildings are damp and insufficiently drained. A small proportion only of the habitations have proper bathing facilities.

Cellars are not used for storing fuel, nor for the deposit of ashes and sweepings. No diseases have occurred due to overcrowding or unfitness of dwellings, or from bad condition of cellars. The fuel used has no perceptible influence on public health. The ground under basement floors is not cemented.

No ill effects have been observed from arsenic paper in sleeping and living rooms, nor from any wall-paper or dyed wearing apparel.

GAS AND LIGHTING.—The city is lighted by gas; works located in the western part of city; they are not considered a nuisance in their neighborhood. The lime process of purification is used, and is satisfactory. Refuse from the works is thrown into the river.

Gas is furnished at from $2 to $3 per thousand feet. Quality of gas not always satisfactory. No injurious effects to health have been observed from it, nor has any analysis of the gas or test of its illuminating power been made. Nearly all streets are lighted with it; alleys are not. Only about one-eighth of the dwellings are so lighted.

No precautions are taken to ascertain grade; nor do restrictions exist on the sale of coal oils, burning fluids, etc. No accidents have occurred from these in the city within past five years, nor from explosions of gas. Water-gas is not used, nor the electric light.

GARBAGE AND EXCRETA.—Local ordinances require that alleys, privies and premises generally be kept in good sanitary condition and that all nuisances be removed at the householder's expense. Kitchen refuse is required to be removed in covered vessels, and is so removed by corporation employés at corporation expense. Nearly all garbage and refuse is taken out of the city and dumped in old coal shafts, daily. This is its ultimate disposition, and is regarded as satisfactory. The manner of removal is not altogether satisfactory, and not as thoroughly done as a larger expenditure would secure. The cost to the corporation last year was $1,000. Considerable garbage is burned. Dead animals are buried outside the city, and this manner of disposal is satisfactory.

Three-fourths of the dwellings have cess-pools on their premises for the delivery of kitchen and laundry waste-water. They are porous, being nothing more than holes in the ground, and are not furnished with overflows. The flush tank is not in use. In some cases absorption drains (of tile) are in use. Cess-pools are cleaned by parties running garbage wagon.

All premises have privies, about 20 of them delivering into sewers, none to cess-pools. But few of them are water tight. They are cleaned on order of the health officer. One case of supposed contamination of well by cess-pool or privy was reported, but not fully investigated. The dry earth system is but little used.

MARKETS AND FOOD SUPPLY.—-Markets are established by custom, each one regulated by its owner. There are no public market places. There are eleven meat and two fish markets. Butter, cheese and vegetables are sold from grocery stories. They are open every day at all hours. The buildings are private and are not a source of revenue to the city.

One inspector is appointed by the city to look after the food supply, and is paid $50 per month for his services. Such supervision is fairly effective in preventing the sale of unwholesome articles.

The supply of fresh meat is obtained from the surrounding country, and as to quality is fair; quantity, sufficient. Some meat and fish were condemned last year by the inspector; quantity not known. About one-third of the fowls brought to the city are sold to consumers alive.

All vegetables and about one-fourth of the fruit consumed is derived from the immediate vicinity; quantity, sufficient; quality, good. No vegetables or fruits were condemned last year. There are no municipal regulations with regard to hucksters or peddlers. Fruits and vegetables are not allowed to be offered for sale without regard to quality. No facilities are afforded producers, such as sheds, etc. Producers may sell direct to consumers without payment of any tax, and most of them so sell.

The milk supply is derived from dairies in the immediate vicinity. Cows run on grass in summer, and are fed on hay and corn in winter.

No cases of poisoning or acute disease have occurred caused by unwholesome articles of food, canned meats, etc. The State law concerning adulteration of food. drink, etc., is not enforced. Very little oleomargarine or analogous substance is known to be sold for butter.

SLAUGHTER HOUSES AND ABATTOIRS.—Animals for city markets are obtained from the surrounding country. The number slaughtered annually for city consumption is about 2,088 beeves, 2,760 hogs, 912 calves and 960 sheep. They are usually driven to the place of slaughter and are inspected before and after being slaughtered.

Pleuro-pneumonia, "lumpy-jaw" and hog cholera are diseases that render the flesh injurious for food. Animals that die in transit are carted away from city and buried. No statistics to be had of the number of animals or quantity of meat condemned annually. The business of slaughtering is conducted in small establishments beyond the city limits. They do not drain into open or covered sewers which pass through the city. The fat and tallow are rendered, and the blood and animal refuse is fed to hogs or buried. Hogs are kept for the purpose. The meat of such hogs is carefully inspected and the public thus protected from consequent danger. The rendering is usually done on the day when animals are slaughtered. Meat is cooled by ice. Slaughter houses must be one mile from city limits.

MANUFACTORIES AND TRADES.—There are no manufacturing establishments considered a nuisance within the city limits. Restrictions are imposed upon such by local ordinance. There are none that pollute the water supply, nor which produce noxious gases or vapors, or diseases in workmen. There are no women employed in any factories.

The hours of labor are 10, with one hour for dinner. Children are employed in some factories, notably, the bottle works, the youngest being about 10 years of age. Hours of work 10. Their employment does not seem to affect their health.

The cubic air space and ventilation of rooms occupied by work people is generally satisfactory. Sometimes bad air in the coal mines affect the miners, but not often. The arrangements for privies and water closets for work people are satisfactory.

HOSPITALS AND PUBLIC CHARITIES.—There are no hospitals, almshouses, infirmaries nor asylums in or near the city, and no free dispensaries other than a Ladies' Aid society to aid the poor. The city does not employ a physician for the poor. The only ambulance is a patrol wagon.

POLICE AND PRISONS.—The organization of the police force consists of a marshal, an assistant and four patrolmen The assistant marshal acts as inspector of nuisances. The four patrolmen are on night duty.

There is one temporary lock-up, in which both sexes are confined, though in separate apartments; average daily occupancy, one to two. The dimensions of single cells are 4x7 feet and are formed of iron bars opening into large, well ventilated rooms. Vagrants are not kept separate from prisoners. Water closets in the building are drained into sewer. Prisoners are required to keep clean.

There are no jails, penitentiaries or houses of correction in or near the city, and no houses of prostitution or prostitutes publicly known as such. There are 45 places in the city at which intoxicating drinks are sold. About 15,000 barrels of malt liquor are consumed annually, and 500 to 600 barrels of distilled spirits.

There were 325 cases of drunkenness brought before the police courts last year. The sale of intoxicating liquors is regulated by municipal ordinance.

FIRE ESTABLISHMENTS.—The fire department is a paid one to the extent of one dollar per hour per man for actual service at fires. There is no insurance patrol; no steam nor hand fire engines. The equipment consists of one hook and ladder truck and one hose cart, at present. Water supply for fires is from the water works; pressure direct from stand-pipe. Babcock fire extinguishers are in general use.

The annual expense of this department is about $400. About fifty persons are employed. Only two men berth at the engine house. The patrol wagon is used when needed as an ambulance for the department. City physicians give their services to the department under contract. There was loss of one life from fire last year.

No fires occurred last year owing to use of dangerous fluids; one occurred from carlessness resulting in burning a child to death in a barn; none were from spontaneous combustion, but there were three of incendiary origin.

Gun-powder, nitro-glycerine, dynamite and coal oil are required to be stored outside of city limits. No measures are taken to insure complete inspection of illuminating oils. The State law, requiring doors of public buildings to open outwards, is complied with.

CEMETERIES AND BURIAL.—There are no cemeteries within the city limits, but three near by—the Riverwood, Barnhard's and the Catholic. No record has been kept of interments made.

It is not thought that sub-soil drainage from land containing graves contaminates springs, wells or water courses. The nature of the soil where graves are dug is sand and gravel, and it is unusually dry at the depth the body is placed. No vaults in use. Rapidity of decay five to ten years. No nuisance or evil effects have been observed from the cemeteries.

Extra precautions are taken with regard to the burial of people dying from small-pox, scarlet fever and diphtheria. There is no receiving vault. Burial permits are now required.

PUBLIC HEALTH, LAWS, REGULATONS AND SANITARY OFFICIALS.—The board of health is a special body composed of 10 members, two from each ward in the city, appointed by the mayor. Its jurisdiction extends three miles from city limits. The members receive two dollars compensation for each regular monthly meeting of the board, and one dollar for each special meeting. Two of the board are physicians. It has an executive health officer, selected by city council, and one assistant, the latter being the assistant city marshal; both of these officers are clothed with police powers. Inspections are made on complaint and otherwise.

The board meets once a month, or on call. It has authority independent of the city council and police to make and enforce ordinances at any time, and has authority to abate as well as define nuisances. When house-to-house inspections are made, cognizance is taken of defective house drainage, sewerage and contamination of water supply. Cess-pools, garbage and conditions of streets are looked after at all times.

In cases of small-pox, scarlet fever and diphtheria the patients are isolated. The board has power to remove cases of contagious diseases to a special hospital. School children are required to be vaccinated. Deaths are registered by the board. Births and marriages become matters of record only as they are reported to the county clerk. The board reports cases of mortality to the city council, and the same are published in the official organ of the city.

REGISTRATION AND STATISTICS OF DEATH AND DISEASE.—While the burial permit system is established, occasionally a burial occurs without permit. A local system of registration of causes of death is in force, and statistics have been published in the city papers.

All cases of scarlet fever, typhoid fever, diphtheria, small-pox, cholera and cerebro-spinal fever, are required to be reported to the local board. Small-pox was epidemic in the city in 1882; scarlatina more or less during the past three years; diphtheria in 1886—100 deaths in the city and suburbs.

Records of death have been kept since September 9, 1886, and from that date to June 1, 1887, are as follows:

Malarial fever	1
Typhoid fever	2
Typhoid-pneumonia	1
Cerebro-spinal fever	1
Brights disease	1
Cerebritis	1
Unknown	3
Diarrhœa	1
Old age	3
Peritonitis	1
Scarlatina	1
Septicæmia	1
Paralysis	1
Diphtheria	35
Still born	6
Phthisis	12
Disease of heart	2
Croup	6
Cholera infantum	6
Enteritis	4
Entereo-colitis	2
Inanition	5
Measles	1
Dropsy	4
Spinal sclerosis	1
Chronic gastritis	1
Cancer of stomach	1
Epilepsy	1
Convulsions	6
Pneumonia	12
Killed in mine	3
Killed on railroad	3
Disease of urinary organs	3

The estimated number of inhabitants under one year is 500; from 1 to 5 years, 2,117.

Malarial and typhoid fevers are less prevalent than formerly, while scarlatina and diphtheria are increasing. Immigrants from abroad or other parts of the country do not seem to suffer very much from the climate.

MUNICIPAL SANITARY EXPENSES.—The total amount of money expended by the city last year for sanitary purposes was $1,241.35; for sewerage, $10,183.53; for paving, street repairs and cleaning, removal of ashes and garbage, was $39,388.13; for public parks,

$129.94; for drinking fountains, $100; for board of health, $300; for quarantine purposes, $100. Total municipal expenses, about $45,000.

PUBLIC SCHOOLS.—The total number of scholars registered is 1,994, with an average daily attendance of 1,650.

School opens at 9 A. M., intermission of 15 minutes from 10:30 to 10:45; noon recess, 12 to 1:30 P. M.; afternoon intermission, 3 to 3:15 P. M. Pupils under 8 years of age are confined to the room one and one-half hours, but are allowed to pass out at any time on request. Scholars are confined to seats without change one-half to one hour. Two sessions with recesses are favored. Some classes sit while others stand during recitations. From the older pupils about two hours study outside of school hours is required. Pupils are required to exercise 30 minutes daily out doors.

Vacations are the legal holidays, one week between fall and winter terms, and one week between winter and spring terms. Usual summer vacation, June to September. Competition for prizes is not a feature in the system of instruction. The methods of correction are suspension and occasionally corporal punishment.

Scholars are required to be vaccinated before being allowed to enter school. This rule was first instituted in 1878 and 1879. No cases of small-pox have occurred among scholars or teachers since the above rule was put in force. Children from families in which contagious or infectious diseases are prevailing are prohibited from attending school.

Fifty per cent. of absences of pupils is due to sickness, as shown by excuses. Cases of short-sight are frequent among the pupils. It is considered safe and advisable that the sexes should have identical school hours, sessions and lessons.

There are seven school buildings in the city; 3 of them have 6 rooms, each 30x26x12 feet; 2 have 3 rooms, each 30x26x15 feet; 1 has 4 rooms, each 30x26x15 feet; 1 has 2 rooms, each 30x26x15 feet. Three of the buildings are heated by stoves and 4 by furnaces; temperature of rooms in cold weather kept from 68 to 72 degs. F. Some sickness is traceable to variations and extremes in temperature. The rooms are ventilated partly by windows and by the Ruttan system of ventilation.

Water-closets are placed in the rear of buildings and are cleaned out or flushed into sewers frequently. Basements are used for storing fuel, and are ventilated separately from rest of building. Water supply is good and abundant.

School rooms are lighted by about 150 square feet of window surface each. Pupils at recitations are from 5 to 20 feet distant from blackboards. No opportunity to exercise for pupils sheltered from cold, heat or wet, but they are free at all times from air contaminated by privy or water-closets. Opportunity is had for drying clothes when wet on coming to school.

The play-grounds are ample, but none of the schools have gymnastic apparatus. City health officers look after the care of the grounds, flushing and cleaning of sewers. The desks in use are of an approved pattern, double desk and seat, and give satisfaction.

SANITARY SURVEY OF TUSCOLA.

By JAMES L. REAT, M. D.

Prefacing his survey of the town of Tuscola Dr. Reat furnishes the following topographic and economic notes concerning Douglas county, of which Tuscola is the county seat. Douglas county is in the east center of the State and its eastern boundary line is within 25 miles of the Indiana State line—Edgar county intervening. Douglas county has an area, as actually computed from the field notes of the government survey, of two hundred and sixty-five thousand four hundred and ninety-seven (265,497) acres, or 414.8 square miles, which is comprised in four hundred and eight (408) sections of land of various shapes and dimensions, many of them being fractional. The largest section contains one thousand one hundred and forty-two (1,142) acres, being section 6, T. 15, R. 7 east, and is one of a tier of similar sections extending east and west along the north end of the county. The section of least area in the county is No. 7 in the fractional range 11, and contains only one hundred and ninety-eight acres. The principal rivers, so-called, of Douglas county are the Kaskaskia, locally called the "Okaw," and the Embarras. The Okaw rises in the southwest part of Champaign (the adjoining county on the north), flows into Douglas in east part of range 7, and, parting off about one-sixth of the county to the west, leaves Douglas and enters Coles county in the west part of range 8. This stream flows through the counties of Douglas, Moultrie, Shelby and Fayette (where it constitutes a stream of some importance and beauty) and on through Clinton, St. Clair and Randolph, where it empties into the Mississippi. In Douglas county the Okaw is, upon an average, six rods wide, generally sluggish, and in times of drouth, in places, it almost wholly disappears, so much so, that a traveler might cross it without noticing a river bed. The principal confluent of the Okaw in Douglas county is known as Lake Fork, which rises in Piatt county, and, flowing southeasterly drops into the Okaw in T. 15, R. 7 east. It is of the same general characteristics as the Okaw. The general direction of the Okaw here is south, that of Lake Fork, its principal feeder, southeasterly.

The Embarras river also rises in Champaign county and flows south and southeasterly in Douglas county, and thence in a generally southeasterly direction into the Wabash river in Lawrence county, in the vicinity of Vincennes, Ind. The principal confluent of the Embarras in this county is called Brushy Fork, which rises in the north part of Edgar county and flows southwesterly in Douglas county, getting into the Embarras in T. 15 N., R. 10 E. of 3d P. M. These streams lie in the eastern part of Douglas, and their general course is southeast in this region. An important feeder of the Embarras is known as Scattering Fork, aptly named, as its exact place of rising can not be designated with accuracy. It takes the drainage, under favorable artificial assistance, of a large part of the west center of the county--indeed it essentially drains two entire townships lying northwesterly and southwesterly of the main channel of Scattering Fork. This stream really flows northeasterly at its confluence with the Embarras, which is in section 14, T. 15 N., R. 9 E. It has a channel, so-called, here of from thirty to forty feet in width and from three to four feet in depth, and in times of high water it actually (being overcharged) flows backward until the Embarras begins to go down again; then Scattering Fork resumes its downward channel, having backed up until a depth of sixteen feet, by actual measurement, made by Capt. O. P. Hunt, is attained. The greater part of the waters of Scattering Fork are collected, in the first instance, from twenty different directions at a place known as the "Pool," which was, twenty years ago, quite a lake, but is now filled up with silt, debris and sediment, because of the fact that here the reverse current of Scattering Fork, during high water, is met by the onward flow from the twenty smaller currents, forming eddy-water.

The proportion of timber land to prairie in this county, according to the statement of Mr. H. C. Niles, a practical surveyor, of Tuscola, is as one to eight. The prairie is quite rich, but level. Brushy Fork, Scattering Fork, Lake Fork and Dry Fork are, essentially, a series of sloughs, which, in wet weather, permit their waters to inundate large tracts of arable land, causing heavy economic loss and increasing the dangers from zymotic forms of disease. Great efforts are now being made, by artificial means, to concentrate the waters rapidly into channels. In the northwest part of the county there has been cut, by a steam dredging machine, in what is known as Dry Fork, a ditch twelve miles in length, from eight to nine feet in depth and twenty-four feet in width at top and ten feet at the bottom, greatest capacity, with about thirty-eight miles of laterals, which furnish outlet for 16,000 acres of land. The estimated cost of the main ditch is $30,000. Lake Fork and other sloughs and streams, are being deepened in a similar manner. Our people have become convinced that thorough drainage will improve the health and add to the prosperity of this part of the State, and are demonstrating their theory by their practice. Artificial drainage has been in operation for many years, and more especially, in the last eight or ten, under recent laws. The county has fifteen drainage districts organized, covering about one hundred and ten (110) sections of land, and costing about $70,000, the benefits of which seem to be well appreciated by land owners, more especially, however, after the first shock of the expense has been met. The grade or fall of territory surface along the depressions where drainage is usually sought, will average four feet to the mile, and, in fact, is just about the fall found in the course of naturally formed prairie drains, such as are called sloughs.

There are a few good natural fountains of water in the county. The "Brian" spring, seven miles to the west of Tuscola, supplying a well-stocked, artificial fish pond, and having a capacity of five gallons of water per minute. The "Patterson" spring, five miles to the east, with twice the capacity of the "Brian," and "Hackett's" spring, three miles east of the county seat, though not so strong a vein, is rather more palatable. A qualitative analyses of these waters give the following as their chief constituents—the main difference is in the "Brian" spring containing sulphur: Bi-carbonate of calcium, bi-carbonate of magnesium, bi-carbonate of iron, sulphate of calcium, chloride of sodium, chloride of potassium, silica and a little organic matter. It will be seen that from their chemical composition these springs furnish peculiarly good drinking water, free from deleterious compounds and possessed of a sufficient degree of hardness to render it palatable, free from the dangers which it is known accompany the constant use of too soft drinking water. Being very mildly alkaline, aperient and chaly beate, the waters of these springs possess medicinal virtues. In order to supply their stock, our prairie farmers are now boring down into the earth until they reach inexhaustable supplies of water. These bored wells vary in depth from twenty-five to two hundred and forty-five feet. These subterranean fountains appear to exist upon the principal of the syphon, the supply not depending upon the depth—some of the deepest borings in the country having failed to secure good supplies of water, while some of the shallow ones have afforded an abundance of palatable soft water. The average depth of twelve of these bored wells, in this vicinity, is one hundred and thirty-three feet. A wind-pump brings up the water, and it is poured into immense tanks for the hundreds of cattle grazed on these rich pastures. These wells are cased with gas-pipe down to the solid rock—a distance of sixty to eighty feet.

The soil of Douglas county is a rich prairie loam, underlying which is a clay, lately found available for the manufacture of tile, for which the first five feet of surface ground is used, rejecting or throwing back the first six inches. There are eleven tile manufacturing establishments in the county and three brick kilns in active operation. One firm in Tuscola employs fifteen to twenty men and manufactures 600,000 to 1,000,000 brick annually. The tile made from this prairie soil have proven of excellent quality, and the brick are now coming into general use and will doubtless stand the test that they are now being subjected to—that of sidewalks and streets pavements—where they are permanently superceding wooden structure on economic grounds alone.

The State geologist, years ago, gave as his opinion, that coal might be found under Douglas county at a depth of about 600 feet. In a communication to Tuscola in 1885, however, he seemed to think that there should be coal under the county nearer the surface than at Decatur or Mattoon, that on the Indiana State line, being found 50 to 60 feet above that at Decatur, which is No. 5. He suggested that a boring of 600 feet would settle the question, proving that coal underlies the whole of Douglas, as well as the adjoining counties, and that in boring for artesian water, we should go at least 3,000 feet. In pursuance of the encouragement had from various sources, a committee of citizens of Tuscola, backed by liberal contributions, instituted a search for coal in the town in April, 1885, but in August, the same year, the boring was abandoned, after having been carried to a depth of 779 feet. No coal being discovered, nor any encouragement therefor, the field of operation was removed about one-half mile south, and the same experience had; here a depth of 932 feet was reached, all at an expense of $2,600. The last boring was tubed with gas pipes from the surface to the solid rock—about 60 feet—and from the bottom there flows out the top a stream of water, rich in chlorides and carbonates. An incomplete qualitative analysis shows the presence of carbonic acid gas, chloride of sodium, carbonate of potassium, sulphate of calcium, silica, etc. Appended are the sections of these borings:

Depth from surface.		Thickness of strata.		Character of strata.
Ft.	In.	Ft.	In.	
20	....	20	....	Soil and blue clay
32	....	12	....	Blue clay
35	7	3	7	Hard-pan
45	7	10	....	Blue clay
52	7	7	....	Hard clay
61	7	9	....	Blue clay
67	2	5	7	Brown clay
75	7	8	....	Yellow clay
81	7	6	....	Blue clay
120	....	38	5	Blue and yellow clay
130	....	10	....	Blue clay
160	....	30	...	Blue clay and boulders
173	....	13	....	Blue clay and boulders
179	....	6	....	Sand
181	....	2	....	Conglomerate boulders
193	....	12	....	Sandy shale
199	....	6	....	Hard sandstone
207	....	8	....	Sandstone
219	....	12	....	Green shale with hard bands
227	7	8	7	Green shale
231	7	4	....	Hard limestone
268	6	36	11	Sandstone
275	....	6	6	Conglomerate
289	....	14	....	Sandstone
326	....	37	....	Hard shale
339	....	13	....	Shale with hard bands
346	9	7	9	Light colored slate
369	6	22	9	Shale or light colored slate
392	....	22	6	Dark shale
400	....	8	....	Shale
402	....	2	....	Hard shale
407	....	5	....	Shale
422	....	15	....	Soap-stone
452	....	30	....	Sand shale
494	6	42	6	Soap-stone
495	....	......	6	Limestone
504	....	......	9	Soap-stone
513	....	......	9	Slate
519	....	6	....	Hard green clay shale
524	....	5	....	Soap-stone
533	....	9	....	Slate and clay shale
540	6	7	6	Shale.
558	6	18	....	Hard brown shale
569	6	11	....	Brown slate
583	....	13	6	Slate
588	6	5	6	Clay shale
607	6	19	....	Slate
620	....	12	6	Black shale
684	....	64	....	Limestone
697	....	13	....	Quartzite
760	....	63	....	Limestone
766	....	6	....	White sandstone
772	....	6	....	Hard quartz
778	....	6	....	White sandstone
780	....	2	....	Hard quartz

SECOND BORING ON THE VONSAUKIN FARM, HALF MILE SOUTH OF ABOVE

Depth from surface.		Thickness of strata.		Character of Strata.
Ft.	In.	Ft.	In.	
5		5		Black loam
21		16		Blue clay and gravel.
34		13		Sand and gravel
36		2		Hard-pan
51		15		Sand and gravel
172		121		Blue clay
263		91		Clay shale
264		1		Quartzite
294		30		Clay shale
372		78		Slate shale
386		14		Black shale
389		3		Green shale
394		5		Quartz with limestone
416		22		Broken limestone bands.
422		6		Granite
429		7		Hard conglomerate
436		7		Broken conglomerate
449		13		Broken crystalized limestone.
462		13		Limestone
478		16		Broken limestone
508		30		Crystalized limestone
602		94		Broken limestone
615		13		Sand stone
669		54		Crystalized limestone
743		74		Conglomerate
839		96		Broken limestone
865		26		Conglomerate
930		65		Limestone

Tuscola, the shire town of Douglas county, is located at the crossing of the Illinois Central and Indianapolis, Decatur and Western railroads and the intersection of the St. Louis branch of the Chicago and Eastern Illinois railroad. The city is 640 feet above the Gulf of Mexico at tide water, in longitude 10 deg. 15 min. west from Washington and in latitude 40 deg. north. It was incorporated in 1859 and has a population of 2,500 inhabitants, half of one per cent. being European and one-fourth of one per cent. of African descent. The business portion of the place, the court house and two of the seven churches are built of brick. In former years, at different times, the fire fiend has destroyed thousands of dollars' worth of property. Recently there has been erected a city hall, engine room and calaboose combined. The first floor front room has a length of thirty feet and width of nineteen feet, twelve feet ceiling, and contains two one-hundred gallon chemical engines, hooks, ladders and buckets. The rear room contains a fire-proof calaboose twenty-six feet long, twenty-three feet wide and twelve feet high, with two iron cells each six feet eight inches by six feet six inches in size and seven feet high. The second story is reached from the engine floor below by a broad stairway. The hall is fifty-seven feet ten inches in length by twenty-four feet in width and fourteen feet high. The building is brick, resting on a concrete foundation. The total cost was four thousand two hundred and eleven dollars ($4,211). A fire establishment consists of two companies of twenty men each. The loss by fire during the past year is estimated at twenty-five hundred dollars ($2,500). The fire limits are established by ordinance. No wooden buildings are permitted to be erected within these limits.

PUBLIC SCHOOLS.—The public school building is a large three-story brick, containing eleven rooms, one office and a basement. It was built and furnished at a cost of $45,000 in the year 1871. Its walls rest securely on a solid concrete foundation and in every particular the entire structure is well preserved. The heating is by the Ruttan hot air furnace and so satisfactory that even in the coldest weather it has never been necessary to adjourn school. There are foul air ducts at the base of each room for ventilation besides windows and doors, but the ventilation has never proven entirely satisfactory. There are four primary, two intermediate, two grammar and two high school rooms, the audience room and the assistant's room. Prof. A. O. Reubelt, A. M., the efficient principal, and an experienced educator, gives it as his opinion (in which the writer coucurs) that the location of the high school room on the third floor is decidedly objectionable. Many of our young ladies are compelled to quit school before graduation, because they can not climb so many stairs.. I can not see that a public school building has any more need of a third story than a wagon has need of a fifth wheel. Unless we wish to destroy the health of our daughters we must change the high school room from the third to the first floor. The present number of pupils enrolled is 446.

Average monthly attendance	414
" daily "	409
Per cent. of attendance on total enrollment	.92
" " monthly "	.98¾
Number pupils eight years of age and over	335
" " " " under	111

In the primary school the length of session averages two and one-half hours. In the other departments the average is three hours, and the number of sessions per day, two. A recess of five minutes is given in the middle of each session. As great stress is laid upon home study, all pupils are required to study at home. The sexes study together and there appears to be no objection to mixed schools. There is but one grade in each room beneath the high school, the first primary excepted, which has two and sometimes three. By this arrangement the teacher has ample time for individual instruction and is not compelled to watch one class while attempting to hear another recite. Tardiness has been entirely eliminated from the schools. The greatest evil with which we have to contend is absence—unneccessary absence. There are but few cases of truancy—as a rule pupils stay out of school with the permission of their parents, and it is greatly to be regretted that such permission is too easily granted. On cloudy days the various rooms are too dark for pupils to study the printed page. When very dark the regular programs are suspended and the teachers are expected to exercise their ingenuity in entertaining their pupils. There are cases of myopia in the school, but as the windows are numerous and large, poor light is perhaps no more fruitful cause than the supposed panacea for the evil, viz.: the use of imperfectly fabricated glasses, inaccurately ground, with different shades and forms and focus, unsuited to the wants of the individual pupil. Exercise in the open air is compulsory. The play-grounds are large and pleasant, with abundant shade. Good water closets, properly screened, are located at a distance of 150 feet from the building and well. The water is good, cool and abundant.

The court house, a three story brick, finished in 1886, has never proven entirely satisfactory, sanitary science, economy and the laws of accoustics having been apparently ignored in its construction. The heating by furnace had to be abandoned at once and stoves substituted. The jail, located in the basement,, consists of a vaulted room of brick and stone, dark damp and insecure. There are six cells, large enough for one person to lie down in, without any direct communication with the air or light. The jailor's family occupies the north side of the basement, where the rooms have poor ventilation and are devoid of sunlight. The alms house, located two and one-half miles east of the town, is a substantial, two story building, with a necessary complement of out-houses, etc., all kept in good condition. There are thirteen inmates, three of them orphan children. The manager of the county farm, also keeper of the paupers, Mr. John T. Lewis, after an experience of six years, gives it as his opinion that two-thirds of the inmates are there from the cause of intemperance.

WATER SUPPLY.—The town is supplied with water exclusively by wells and cisterns; probably less than 10 per cent is furnished by the latter method. The usual depth of the dug wells is from twenty-five to forty feet, furnishing, as a rule, clear, cool, potable water. They are not infrequently located in such close proximity to cess-pools or privies, or both, as to raise the suspicion of contamination, though no positive proof has yet been advanced. The possible danger has been pointed out, and, boring wells from the top of the ground, then casing from the surface to the solid rock with gas pipe, is now being adopted.

PUBLIC HEALTH.—A board of health consisting of three physicians whose duties in part were to do all acts and make all regulations necessary for the promotion of health and the suppression of disease, was discontinued by the present municipal authorities, elected to office in April, 1887. Since that time no organized effort nor concert of action in the direction of sanitary investigations for the preservation or improvement of the public health has been made.

STREETS, ALLEYS AND PUBLIC GROUNDS.—The breadth of the streets is 60 feet, except a broad railway avenue 300 feet wide. The alleys are 16 feet wide. The sidewalks in the business part of town are 12 feet; throughout the residence part of town five and one-third feet. The materials used for sidewalks are pine lumber and brick. The streets are graded from the center to a ditch on each side, but not paved, and in the spring or rainy season, they are very wet, although each year the drainage improves the condition of the streets and the highways throughout the county. There are numerous shade trees growing along the outer border of the walks, and many of the property owners have exhibited a commendable zeal in embellishing their grounds with fruit-bearing trees, and their lawns with those of an ornamental character. The city has three small parks shaded by indigenous trees.

City Drainage.—The plan of drainage is to put down one main, 10-inch tile, six feet deep, one mile each year, north and south, the fall being to the south, and smaller tile east and west on intersecting streets. Into these main or the intersecting tiling, privies, barns, cess-pools, cisterns, cellars, dwelling lots, alleys, gardens, lawns and restaurants, hotels and public buildings are drained.

Police and Prisons.—The police force consists of a marshal and policemen. There are no licensed saloons where intoxicating drinks are sold. The number of persons brought before the police court for drunkenness within the past year was fifteen. Storage of gunpowder, nitro-glycerine and dynamate is prohibited by municipal law.

Habitations.—Seven-eights of the dwelling houses have sufficient yards or clear space around them. Three-fourths are inhabited by their owners. The average occupancy is four and three-fourths. None are known to be over-tenanted. As a general rule, houses that have neither basements nor cellars are properly raised and suitably arranged for sub-ventilation; a few of the old buildings are too near the ground, however. Over-crowding or unfitness of habitation has never been known positively to have formed a nidus of disease, but such unsanitary environments have contributed their deleterious influences in intensifying septic poisons. Ten per cent. of the houses have cellars, and a less number have bath-rooms; none have cisterns, springs, wells or water-closets in basements. Cellars are cemented and tiled and not considered unhealthy if kept clean and have sufficient ventilation.

Slaughter Houses.—Animals for the city markets are obtained from the surrounding farms, and, as a rule, are driven into town and kept on hand for several days before being killed. One firm ships fifteen thousand head of cattle, hogs and sheep (in good condition) to other markets annually. Of the seven hundred hogs, four hundred and fifty beeves and one hundred and fifty sheep slaughtered annually, one hundred and fifty hogs are packed; all the other meats, including a large amount shipped in, are disposed of for home consumption. There is no system of inspection of animals before or after slaughtering. Slaughter houses are located at a reasonable good sanitary distance from the city. They are not considered nuisances; they are held as private property and are tiled and drained into open ditches which flow into Scattering Fork. Lard and tallow are sold in the markets or shipped. The rendering is promptly done, the blood and refuse matter being used as fertilizers. The local butchers here have large ice houses, holding tons of ice each. The supply of fresh meats is in all respects good. Some of the greatest shipping interests from this point are 1,500 tons of broom corn, 1,800 tons of bailed hay, 20,000 head of hogs, cattle and sheep, two hundred tons of poultry—live and dressed—25,000 dozen of eggs, and ten tons of butter, all in good shape, as a rule. Among the manufactured articles produced here are cigars.

Cemeteries.—There is one cemetery within one-half mile of the city. It is thoroughly tiled and is not thought to contaminate wells or the open ditches leading into the larger water courses. Graves are dug four feet deep, and, since the grounds have been so thoroughly tiled, they are generally dry. The soil is loamy. There are no receiving vaults, and burial permits are not required.

SANITARY SURVEY OF URBANA.

By T. R. LEAL, Sanitary Inspector.

LOCATION, POPULATION AND CLIMATE.—Urbana, the county seat of McDonough county, is situated in latitude 4 deg., 6 min., 29 sec., north, and longitude 11 deg., 10 min., 37 sec., west from Washington, at the junction of the Illinois Central and the Indianapolis, Bloomington and Western railroads. It was founded in 1833, and incorporated as a city in 1855.

Its population in 1880 was 3,511, and its present estimated population is 3,250, of which number 386 are under 5 years of age. The natives number 2,925 and foreigners 325; Europeans 323; Asiatics 2; Negroes number 30. No meteorological observations have been recorded.

TOPOGRAPHY.—The country surrounding the city is rolling prairie. There are no considerable hills or mounds in the vicinity, and but little low land or marshes, the latter only in time of high water. The altitude above sea level of the bottom of the lowest valley or ravine near by is 695 feet, its trend is southeast. A large grove of 2,200 acres lies east and northeast of the city. The prevailing winds are west and south, hence the miasma from the woods is not driven into but away from the city. The city is bordered on the west, northwest, south and southeast by farms and gardens and on the east and northeast by forests.

Its site is rolling and the original conformation has not been changed. Only about 300 yards of original water courses have been modified. The elevations above sea level of the highest, lowest and average levels of the town are 720, 695 and 710 feet respectively. The general surface slope of the city is to the north. There is no "made land" other than railroad grades in the city. The character of the ground before filling was low and wet. It was thoroughly drained before grades were built, but it is subject to back water from a creek. This land is filled with earth and cinders to a depth of six feet. Some railroad buildings are upon this land.

The streams of water passing through or near the city are the West Branch of Saline Fork and Boone Branch, the average widths of each being 20 and 15 feet, respectively, and depth 3 and 2 feet. Current fairly rapid. Sides of streams are sloping and in times of high water cover shore ground in many places for 150 feet on either side. The exposed shore ground is mostly hard. Their water is usually clean, but when flush it is fouled with earth and vegetable matter. The beds of the streams are subject to deposits of silt and sand. There are no shoals or flats in them laid bare at any time. There is an artificial lake in the north part of the city which covers 15 acres. The water falls over a dam 4½ feet high. The stream above the fall is fairly rapid. Surface drainage and sewage from the hotel, jail and University of Illinois enter these streams. The bodies of water within or near the city are the Saline Fork and Crystal Lake, covering about 20 acres each. At no time does their water become stagnant, nor emit perceptible odors. The creeks named overflow annually in January, March, July and October, with no obvious effect upon public health. Such overflows and consequent saturation has the effect of raising wells in the vicinity several feet.

The site of the city and vicinity belong to the drift formation. Surface rocks are Lake Superior boulders. The underlying strata, in order of succession from above downward, are black mould 18 inches to 5 feet, yellow clay subsoil, blue clay 25 feet, reddish clay 20 feet, peat 6 feet, gravel 10 feet, soapstone 20 feet, blue slate 25 feet, clay slate 19 feet, coal 6 feet. Their relative permeability by water is in the following order: Sand, humus, yellow clay, blue clay. The direction of the dip is north at an angle of from 10 deg. to 15 deg. The surface soil is a black friable mould. No malarial effects have been observed on disturbing surface soil since the prairie sod has been destroyed. There are some continuous fissures in the gravel and sand through which soil water may flow. No diseases are believed to be due to the soil or geological formation, nor has the spread of any epidemic followed the direction of the flow of underground water.

WATER SUPPLY.—The sources of water supply are wells and cisterns. Water for the public water-works is derived from a huge well 130 feet deep, one mile distant from the city, and between Urbana and Champaign, both places being supplied from the same works. The water from these works is distributed through pipes 10 inches in diameter and is drawn direct from them, no settling reservoir being used. Capacity of stand pipe, 200,000 gallons. During the past year the maximum daily amount of water used was 177,815 gallons, the minimum 42,638, and average 135,177, making an average daily supply of 20 gallons to each inhabitant. In case of fire there is always on hand about 200,000 gallons of water.

The chemical analysis of the water drawn from the water-works gives the following result:

	Parts per 100,000.
Total hardness represented by calcium carbonate	2.5367
Permanent hardness represented by calcium carbonate	0.9400
Temporary hardness represented by calcium carbonate	1.5967
Oxygen absorbed by mineral matter	0.113
Oxygen absorbed by organic matter	0.028
Nitrogen in saline ammonia	0.148
Nitrogen in albuminoid matter	0.0288
Total residue by evaporation	26.1
Chlorine	1.136

The water supply from the water-works has never been offensive in taste or odor, but that of some wells is. The city has ten public fountains and thirty-five plugs. Some artesian well water is used, such wells being usually 150 feet deep. Character of water soft. No chance except at mouth of wells for organic contamination reaching the strata by which such wells are supplied.

Nine-tenths of the water for family use is derived from cisterns and wells. Depth of wells to bottom from 20 to 40 feet, to surface of water 4 to 18 feet. Wells and cisterns are so located as to be largely free from cess-pool or privy contamination. The latter are often cleaned and removed and kitchen and laundry slops carried far from the location of well and cisterns.

A few cases of enteric fever and diphtheria have been traced to wells. In nearly all the wells is found chlorine, and in a few mineral and vegetable matters. There are no public baths. There are are ten public drinking fountains in use constantly; daily capacity, 10,000 gallons.

Drainage and Sewerage.—The area included within the city limits is 800 acres, two-thirds of which is closely built up. The character and sufficiency of the surface drainage is fair. Underground drains to act exclusively as such have been constructed for about one-half of the city. They are placed at a depth of 8 feet with a fall of 4 to 5 inches to the rod. There is a swamp of about one acre in the town and one of four acres northeast of the limits, Cellars in part of city are liable to overflow in cases of heavy rains, and to intrusion of soil water.

There is no regular system of sewerage. There are six outlet sewers discharging into Boone branch and the east branch of Saline Fork. Their diameters at the mouth are from 6 to 25 inches; they are constructed of tile clay and glazed tile, but not tightly cemented. They are round and are kept fairly clean by flow, no artificial means being used. Three-fourths of the area of the city is not sewered, and it is all built upon. Total length of sewers about 14,000 feet. About two-thirds of the surface drainage passes into them. Their capacity is sufficient in heavy storms, with some exceptions. No attempt is made to utilize sewage. Sewers are ventilated by open gratings. There are no municipal regulations concerning the drains connecting houses and sewers, and no trap is required in the course of the connecting drain, nor is it compulsory that house drainage be conveyed to sewers. Odors are slightly perceptible at sewer openings and outlets.

Streets Alleys and Public Grounds.—The general width of the roadways is 60 feet; of sidewalks, four and one-half feet. The latter are paved with wood, brick and gravel. Streets do not differ in healthfulness or comfort owing to direction. Total length of paved streets, one-fourth mile; material, wood. Length of streets unpaved, twenty miles; character of soil, humus and clay. They are wet and muddy in the spring of the year. Roadways are constructed convex in centre with open surface drains next to sidewalks and a tile drain on either side of roadbeds. The city cleans the streets, while private individuals do the sprinkling. Results, fairly satisfactory.

Shade trees are planted in rows near sidewalks, and are of many varieties—maple, elm, linden, box elder and hackberry. Gas does not injure the trees appreciably. In some places the trees keep the ground too damp, and leaves are left to decay, thus having a bad effect upon health. Trees are cared for by private owners. Grass grows between sidewalks and wagon tracks, but is not protected.

Alleys are 12 feet wide. Regulations forbid the deposit of ashes, garbage, etc., therein and parties doing so must remove them at their own expense. There are two public parks in the city, the court house park, area one acre, and Crystal Lake park, area 40 acres. Both are kept in good condition. No public fountains in them. Ten public urinals are provided in the streets and parks. Areas for and sources of amusement are provided in the parks.

Watchmen are placed at railroad crossings most in use to warn the public of danger. No lives have been lost at these crossings in the past five years. One accident occurred last year on street railway.

Habitations.—There are 702 dwellings within the city limits, three-fourths of which are inhabited by the owners. The average occupancy of each is four and one-third. There are about 30 tenement houses occupied by two or more families; two of them are over-tenanted, but not badly so. There are no municipal regulations concerning over-occupancy.

Within a certain boundary called "fire limits" no frame buildings are allowed to be erected, and this regulation is strictly enforced. Three houses were condemned last year as unfit for habitation for sanitary reasons.

About 40 dwelling houses have connection with sewer, one-half of them supplied with suitable traps. Six houses have either well or cistern in basement; none have privies.

About five-sixths of the dwellings are isolated buildings with sufficient yard or clear space all around them. One-fourth of the houses are too near the ground to allow good sub-ventilation. There are many damp cellars in the city, about 40 being insufficiently drained. About one-fifth of the habitations have proper bathing facilities.

Some cellars are used for storing fuel, but none for deposit of ashes and sweepings. Some cases of sickness have been due to bad cellars and poor ventilation. Coal, the fuel generally used, seems to have a bad effect on weak lungs. The ground under basement floors is not usually cemented. Height of buildings generally one-third width of streets. Ill effects have been occasionally observed from use of arsenic paper in sleeping and living rooms and also from dyed wearing apparel.

Gas and Lighting.—The city is lighted by gas. The works are located outside the corporate limits. No complaint has been made as to their being a nuisance in the neighborhood. The process of purification in use is the iron sponge, and is satisfactory. Gas is furnished at $2 per thousand feet. The quality is good. No injurious effects to health have been observed from the gas. An analysis of the gas is as follows:

Hydrogen sulphide	2.09	per cent.
Carbon di-oxide	1.57	"
Carbon mon-oxide	4.57	"
Ethylene homoloques, C. H. 2	6.17	"
Nitrogen	1·64	"
Hydrogen	48.63	"
Marsh-gas	30.61	"

About one-half of the streets are lighted with gas and about one-seventh of the dwellings. No precautions are taken to ascertain the grade, nor are restrictions imposed on the sale of illuminating fluids. One accident occurred from an explosion of these fluids in five years; none from gas. Water gas is not used, nor the electric light.

GARBAGE AND EXCRETA.—Regulations require property owners to remove all garbage at their own expense, and these are fairly well complied with. Kitchen refuse is not required to be removed in covered vessels. Garbage is taken to abandoned brick yards and is removed every ten days; ashes once a month. The ultimate disposition of garbage is to use it for manure, while cinders and ashes are used as ballast for walks. Garbage is disinfected before and after removed with lime and copperas, and it is not believed that any nuisance or probable damage to health results from infrequent removals or improper handling during removal or neglect during any part of process. About 10 per cent. of garbage and refuse is destroyed by fire. Dead animals are removed outside the corporate limits and buried; this disposition is in most cases satisfactory.

Kitchen and laundry waste water is delivered into cess-pools on about two per cent of the premises. Cess-pools are built tight, but are not furnished with overflows. The flush tank is not in use. Absorption drains under the surface are used only to a small extent. There are no rules for the construction of cess-pools, but after having been declared a nuisance, a fine of from $3 to $10 per day attaches for maintaining them. Methods in use are satisfactory when officers do their duty.

Two per cent. of the houses have water closets, half of which deliver to sewers, and the rest to cess-pools. Eighty per cent. depend wholly upon privy vaults, one-half of which are water-tight. Privies must be built not less than three feet from line of lot, street or alley, and on notice being given to clean the same, a penalty of from $5 to $15 attaches for each day's failure to comply. One per cent. of the vaults connect with sewers. Five cases of contamination of wells from privies have occurred of late. Twenty per cent. of the dwellings depend upon the dry-earth system.

MARKETS AND FOOD SUPPLY.—Markets are established by custom, without any special usages or regulations. There are no public market places. Markets are open six days in the week. There is no system of inspection or supervision of private markets. The supply of fresh meat is abundant and quality good. No fish or meats were condemned last year. Meats and vegetables are brought to market in wagons from the surrounding country. In summer, nine-tenths of the fowls are sold to consumers alive; in winter, only about one-fifth.

The supply of vegetables and fruits is abundant and good. Three-fourths of these are derived from immediate vicinity. None were condemned last year. Producers may sell vegetables and fruits along the streets to consumers without payment of tax and one-third so sell. Vegetables and fruits are allowed to be sold without regard to quality.

The milk supply is good, and comes from cows fed on grass, hay, corn and mill feed. One case of poisoning occurred recently from blackberries put up in tin cans. No complaints have been made under the State law concerning adulteration of food and drink. A very little oleomargarine is sold in the city, and only then for what it really is.

Slaughter Houses and Abattoirs.—Animals for the city market are obtained from the surrounding country. About 500 beeves, 300 sheep and 1,000 hogs are slaughtered annually for city consumption. They are driven and hauled to place of slaughter; are not inspected either before or after slaughter. The slaughtering of animals immediately after a long drive has a tendency to make the meat dark and gluey, and soon putrifies. Sometimes the men break out with a rash when they handle such meat. Fasting of animals for 24 hours two days before slaughter makes the meat flabby and soft, but no harm ensues when the fast comes just before slaughter. The following diseases render the meat of animals unfit for food, viz.: "big jaw," cancer, Texas fever and murrain. The mode of slaughter is to fell them, then bleed. Animals that die in transit are sent to rendering establishment. No bad meat is offered for sale, hence none has been condemned. Slaughter houses are built at private expense. The business is carried on in small establishments. None of them drain into open or covered sewers that run through the city. They are not considered nuisances in their neighborhoods, and are all beyond the limits. Fat and tallow are sent to rendering establishments, blood and refuse are used as fertilizers, or fed to hogs kept for the purpose. The meat of these hogs is not so solid, firm or sweet as that of corn-fed hogs. In summer, rendering is done within 24 hours. Meat is cooled with ice.

Manufactories and Trades.—There are no manufacturing establishments within the city or near the suburbs that are considered as nuisances. Restrictions are imposed upon such establishments by local ordinance. There are none which pollute the water supply, nor any which produce noxious gases or vapors, or produce disease in the workmen. Women are employed in some of of the factories and are healthy. The hours of labor are ten, one hour at noon for dinner. Children are employed in factories, with same hours as adults. The youngest so employed are 14 years of age. Their employment does not seem to affect their health.

The cubic space and ventilation in the rooms occupied by the work-people is satisfactory. No diseases have been observed due to insufficient air supply to the work-people. The arrangements for privies and water-closets in all factories are satisfactory.

Hospitals and Public Charities.—The county almshouse, located one and one-half miles east of town, is the only charitable institution. It contains 63 beds; 10 of them single. It is governed by a superintendent under a committee of the .board of supervisors. The main building is 24x50 feet and the two wings are 40x28 feet each; all two stories in height. The insane hospital is 18x26 feet and one story high. There are no free dispensaries. No physician is employed by the city for the poor.

Police and Prisons.—The police force consists of a marshal and two patrolmen. The former acts as inspector of nuisances. Patrolmen relieve one another on night duty. There is one station-house, in which both sexes are confined. The air space per head is 672 cubic feet; dimension of cell 7x12x8. Vagrants are not kept separate from prisoners. Ventilation is effected by means of grates in the ends of the cells. Water closet arrangements are not satisfactory and there are no facilities for bathing inmates. Men found drunk are taken to the lockup. The sick are taken home, or if strangers are cared for at the hotel.

The county jail is within the city limits. Its average occupancy is 12. Dimensions of its single cells 6x6x7; air space 252 cubic feet. The building is heated by steam and ventilated by windows. No epidemics have occurred among the prisoners. The usual diet allowed them is fresh beef, vegetables, bread and coffee. No means of preventing indolence are provided.

There are five houses of prostitution in the city and seven prostitutes. It is not observed that these women are more subject to general disease than others. There are five places in the city at which intoxicating drinks are sold. The estimated amount of malt liquors consumed annually is 10,400 gallons, and of distilled spirits 8,000 gallons. Thirty-five cases of drunkenness were brought before the police courts last year.

Fire Establishments.—The fire establishment is organized by the city council and its expenses are defrayed by insurance companies. One hand engine and hose cart constitute the equipment of the department. The water supply is from cisterns and fireplugs, in abundance. Some few "Babcock" fire extinguishers are in use. The annual expense of the department is about $300; number of persons employed, 27.

The loss of property last year by fire was $1,000. One fire arose from the use of coal oil; none from carelessness or spontaneous combustion, but two were of incendiary origin. Only ten pounds of powder and one barrel of coal oil are allowed in a sales room, and no nitro-glycerine in town. No measures are taken to insure inspection of illuminating oils. The State law regarding doors of public buildings opening outwards is not fully complied with.

CEMETERIES AND BURIAL.—There is one cemetery within the city limits, but no interments are made therein. There are two near the city, containing about 2,500 graves, contributed from the old city cemetery and from Champaign and surrounding country. So far as can be observed, sub-soil drainage from land containing graves does not contaminate wells or water courses. Average depth of graves, 5 feet; nature of soil, humus on clay, and generally dry at depth bodies are placed. Vaults built of brick and stone are in use. Bodies decay in vaults in about ten years; in graves in about three years. No nuisance or evil effect has been observed from the cemeteries.

Persons dying of contagious diseases are buried at night and disinfectants used. There is one receiving vault, and it is so managed that it does not become a nuisance. No burial permits are required.

PUBLIC HEALTH LAWS, REGULATIONS, SANITARY OFFICIALS.—The board of health is composed of three councilmen, selected by the mayor, who serve for one year without salary. The bounds of their authority are the city limits. None of the board are physicians. It has a sanitary inspector who is not a physician. None of them have police powers. They make inspections without waiting for complaint to be made.

The board meets once a month. Its duties are not defined by law. It has no authority independent of city council at any time, and can only define, not abate, nuisances. All insanitary conditions of houses and premises found by the inspector are brought to the notice of property-owners, and if not corrected, they are reported to the city council and steps taken to enforce the correction of the evils.

In cases of small-pox the patients are strictly isolated. In cases of contagious diseases, the mayor has power to remove persons to special hospital and never fails to do so. All children who attend school must be vaccinated. Births, marriages and deaths become matters of record only as they are reported to the county clerk.

REGISTRATION AND STATISTICS OF DEATH AND DISEASE.—Burials occur without record of death or permission granted by health authorities. No local system of registration of causes of death is in force. Neither cholera nor yellow fever was ever epidemic in the city, but small-pox was epidemic in February, 1870, and June, 1884; diphtheria in 1858–'59 and '60; cerebro-spinal fever in 1873, and typhoid fever in 1855 and '58.

Ague, congestive chills, and other malarial diseases, cholera infantum, acute cerebral trouble in children and flux are less prevalent than formerly; while enteric fever, phthisis, bronchitis and venereal diseases are more prevalent. Immigrants from abroad or other parts of the country do not seem to suffer from the climate.

Municipal Sanitary Expenses.—The estimated amount of money spent last fiscal year by individuals for drainage, sewerage, paving, setting out of trees, repair of streets, street cleaning and removal of ashes and garbage, is $5,596. Expended by the city for drinking fountains, $200, for city board of health, $150. Total municipal expenses last year, $11,845.15.

Public Schools.—The total number of scholars registered in the public schools is 728; average attendance, 590. There are 3 schools of the first grade, 3 of the second and one each of the 3d, 4th, 5th, 6th, 7th and 8th. Pupils under eight years of age are confined one and one-half hours to the room and twenty minutes to seats without change. Experience favors two sessions daily with one long intermission. In the lower grades classes stand during recitations; in the higher either sit or stand. Pupils are not required to study out of school. The time devoted to outdoor recreation daily, including noon intermission, is one and three-fourth hours. Holidays are Saturday of each week, an extra half holiday each month, two weeks at Christmas, and from the middle of June to the first of September. Exercise in the open air is compulsory in good weather.

Competition is not a feature of the system of instruction. No prizes are offered. The sexes study and recite together. On rare occasions the switch is used as a method of correction.

Children must all be vaccinated before being admitted to the schools. This rule was instituted about four years ago, and is strictly enforced. During this period no cases of small-pox have occurred among either teachers or scholars. Scholars from families in which contagious or infectious diseases are prevailing are not allowed to attend school. This rule is rigidly adhered to. Five per cent. of absences of pupils is due to sickness. Among the scholars are six shortsighted, three color blind, one case of disease of spine, several of dyspepsia and one with broken arm. Large school buildings are considered unfavorable to the general health of pupils and high buildings injurious to girls from 13 years of age and upwards.

Co-education of the sexes is considered safe and identical school hours and sessions advisable.

The following table of weights, ages and heights of pupils in three ward schools shows that girls hold their own with boys until they get their growth:

TABLE OF AGES, HEIGHTS AND WEIGHTS OF PUPILS IN THE WARD SCHOOLS OF URBANA, ILL.

	Age—Years.			Height—Feet and Inches			Weight—Pounds.			Color Blind.
	Min.	Max.	Ave.	Min.	Max.	Ave.	Min.	Max.	Ave.	
First Primary—										
17 girls	6	11	$7\frac{3}{17}$	3.4	4.6	$3\frac{16}{17}$	40	63	$48\frac{15}{17}$	......
23 boys	6	11	$7\frac{5}{23}$	3.3	4.7	$3\frac{21}{23}$	40	74	$51\frac{7}{23}$	......
Second Primary—										
20 girls	8	14	10	4.	5.2	$4\frac{9}{20}$	51	142	$59\frac{4}{5}$	2
19 boys	8	17	$10\frac{9}{19}$	4.2	5.4	$4\frac{9}{19}$	48	134	$68\frac{7}{19}$	1
First Intermediate—										
16 girls	9	13	$10\frac{1}{16}$	4.1	5.1	$4\frac{9}{16}$	52	92	$70\frac{15}{16}$	......
18 boys	8	13	$10\frac{1}{6}$	4.1	4.10	$4\frac{4}{9}$	50	87	$66\frac{7}{18}$	......
Second Intermediate—										
28 girls	11	17	$12\frac{2}{7}$	4.3	5.2	$4\frac{11}{14}$	58	122	$83\frac{15}{28}$	......
31 boys	10	17	$12\frac{15}{31}$	4.3	5.8	$4\frac{25}{31}$	54	139	$85\frac{9}{31}$	2
Third Intermediate—										
28 girls	10	15	$13\frac{1}{14}$	4.5	5.7	$4\frac{25}{28}$	65	165	$93\frac{6}{7}$	......
27 boys	11	16	$13\frac{24}{27}$	4.5	5.10	5.	61	139	$93\frac{6}{27}$	8
First Grammar—										
17 girls	12	17	14	4.10	5.6	$5\frac{1}{17}$	84	154	$109\frac{3}{17}$	......
20 boys	11	17	$13\frac{17}{20}$	4.3	5.9	5.	62	153	$96\frac{3}{4}$	4
Second Grammar—										
22 girls	13	16	$14\frac{8}{11}$	4 7	5.7	$5\frac{1}{11}$	75	134	$104\frac{21}{22}$	......
8 boys	13	16	$14\frac{3}{4}$	4.11	5.10	$5\frac{1}{4}$	29	160	$116\frac{1}{8}$	1
High School—										
29 girls	14	18	$16\frac{10}{29}$	4.10	5.9	$5\frac{10}{29}$	96	148	$120\frac{22}{29}$	4
24 boys	14	24	$16\frac{23}{24}$	4.11	6.	$5\frac{7}{12}$	89	155	$140\frac{1}{12}$	9

The majority of the cases under "color blind" proves to be lack of cultivation rather than want of faculty. Out of 347 persons examined, 31 were practically color blind, that is, they would have failed in an emergency presented at that time. This shows the necessity of cultivation in this direction, from the fact that it is a poor time to give lessons on colors in the face of danger. With a little care the most of these persons can be taught to distinguish the primary colors easily. The person who can not recognize each primary color at first call should be labeled "dangerous." Those who failed were confused mostly on green and blue, some on red and yellow.

The school buildings are situated in the centre of a three-acre lot. Altitude of lot 720 feet abova sea level. The soil is humus on clay; well drained with tile. The main building was erected in 1872, is two-stories high, and cost $16,000. Since then three smaller buildings have been erected at a cost of $5,000 each, making total cost for building $31,000.

They contain 15 rooms with an average seating capacity of 60. The buildings are heated by the Ruttan system of furnaces. Mean temperature of school rooms in cold weather when opened is 70 deg. to 75 deg. F., when closing time comes from 50 deg. to 60 deg. Colds are traceable to variations and extremes of the temperature. Sixty tons of fuel are required annually to heat the buildings. Rooms are ventilated in winter by a system of registers, in summer by opening windows and doors and by exhaust pipes. The method is fairly satisfactory.

The dry-earth system of water-closets is used with good satisfaction. Basements are used for furnaces and storing coals. They are ventilated separately from the rest of the building. The water supply is from a well; quantity abundant and quality good.

If anything, some of the school rooms have too much light. The average number of square feet of surface through which light passes into each room is ninety. Distance of pupils from blackboards during recitation, about 12 feet. Basements can be utilized for exercise free from cold, heat or wet, and also for drying clothes when wet coming to school. Play-grounds cover three acres; no gymnasium connected with them. Rubbish and excreta are removed monthly. Desks in use are mostly Andrews' pattern, and are fairly satisfactory.

VITAL STATISTICS OF ILLINOIS, 1886.

§1. MARRIAGES: §2. BIRTHS: §3. DEATHS.

Table I—Marriages in Illinois, 1881–1886.

The State and Counties.	1881.	1882.	1883.	1884.	1885.	1886.
Illinois	32,049	34,072	34,805	33,758	33,566	34,843
Adams	554	541	549	578	590	532
Alexander	209	201	165	197	240	257
Bond	152	158	163	131	139	168
Boone	88	87	84	85	76	63
Brown	139	119	129	122	136	137
Bureau	298	311	270	280	279	261
Calhoun	59	59	63	67	61	74
Carroll	265	146	175	150	155	167
Cass	155	167	136	130	128	123
Champaign	335	373	358	334	353	338
Christian	254	313	219	243	212	416
Clark	253	202	241	247	211	239
Clay	192	186	178	181	154	142
Clinton	169	145	154	159	131	146
Coles	307	238	286	244	279	278
Cook	7,897	9,605	10,055	10,182	10,400	11,349
Crawford	189	168	176	162	175	154
Cumberland	161	146	148	150	147	140
DeKalb	232	264	299	247	243	272
DeWitt	177	177	167	158	164	146
Douglas	159	174	152	167	119	159
DuPage	162	175	163	149	165	188
Edgar	263	211	233	245	241	250
Edwards	84	105	87	93	94	91
Effingham	224	196	213	165	169	229
Fayette	283	236	282	242	213	238
Ford	156	169	154	161	166	133
Franklin	182	206	168	175	186	206
Fulton	363	353	369	356	335	343
Gallatin	206	231	202	182	179	215
Greene	223	217	234	229	192	205
Grundy	136	163	161	155	168	162
Hamilton	181	172	198	171	186	190
Hancock	321	322	282	238	334	294
Hardin	120	115	123	131	125	113
Henderson	70	69	90	66	71	64
Henry	311	334	349	318	296	342
Iroquois	288	280	290	281	229	233
Jackson	262	265	246	272	235	266
Jasper	191	169	186	182	154	191

Table I.—Continued.

The State and Counties.	1831.	1882.	1883.	1884.	1885.	1886.
Jefferson	222	191	217	224	260	225
Jersey	149	163	145	125	177	98
Jo Daviess	159	118	175	124	160	158
Johnson	143	169	175	126	151	150
Kane	408	420	520	560	547	568
Kankakee	207	282	302	306	250	236
Kendall	110	88	133	108	91	85
Knox	376	402	372	370	352	297
Lake	140	157	58	83	142	146
LaSalle	679	713	728	676	642	701
Lawrence	176	163	158	156	125	136
Lee	250	241	264	230	206	286
Livingston	284	308	326	297	356	275
Logan	222	241	225	249	200	212
Macon	358	384	379	357	371	371
Macoupin	285	359	355	320	290	346
Madison	450	497	469	454	385	421
Marion	283	242	284	238	232	239
Marshall	141	126	132	125	129	119
Mason	129	156	167	145	165	146
Massac	188	182	147	155	195	203
McDonough	306	289	277	281	266	252
McHenry	170	177	211	208	224	224
McLean	557	531	596	564	520	555
Menard	125	150	131	108	111	102
Mercer	142	147	149	163	121	135
Monroe	150	122	119	113	119	121
Montgomery	353	247	275	279	214	245
Morgan	301	306	302	286	271	274
Moultrie	138	135	152	122	120	119
Ogle	206	229	216	193	203	199
Peoria	644	721	655	634	633	618
Perry	169	163	195	158	147	178
Piatt	151	141	137	133	126	114
Pike	268	277	327	279	260	278
Pope	125	144	146	136	132	178
Pulaski	114	99	115	103	142	96
Putnam	47	45	54	43	43	45
Randolph	246	213	234	187	215	214
Richland	175	187	180	165	133	166
Rock Island	407	457	427	378	373	352
Saline	171	167	194	163	218	201
Sangamon	565	543	560	573	525	538
Schuyler	142	166	166	158	140	129
Scott	93	99	107	111	89	102
Shelby	270	273	260	286	244	229
Stark	115	104	102	78	86	83
St. Clair	582	681	626	608	701	625
Stephenson	323	328	302	312	289	253
Tazewell	293	268	269	261	259	246
Union	236	142	226	194	196	230
Vermilion	540	581	505	489	437	523
Wabash	113	138	146	128	123	132
Warren	190	203	222	206	161	161
Washington	211	168	195	174	169	171
Wayne	216	218	238	231	231	46
White	252	247	248	260	252	273
Whiteside	276	230	262	289	264	239
Will	558	625	617	562	561	572
Williamson	133	222	220	203	229	211
Winnebago	180	311	318	349	317	318
Woodford	166	199	196	186	146	164

TABLE II.—*Births reported for the year 1886:* LOCALITIES SPECIFIED—"*Cities,*" *over 5,000 population; "Towns," over 500, under 5,000; "Country," places less than 500.*

The State and Counties.		The year...	January ...	February ..	March	April	May........	June	July	August	September.	October....	November.	December..
Illinois...........	Cities...	24,747	2012	1994	2311	1960	1843	1908	2099	2241	2133	2090	1975	2181
	Towns..	15,410	1329	1176	1580	1206	1141	1151	1224	1277	1305	1243	1256	1522
	Country	19,040	1555	1538	1875	1585	1355	1337	1526	1659	1503	1628	1509	1870
	Total.	59,197	4896	4708	5766	4751	4339	4396	4849	5177	5041	4961	4740	5573
Adams	Cities...	549	58	39	66	33	40	34	24	76	34	36	31	78
	Towns..	71	......	2	14	8	9	4	2	4	11	6	1	10
	Country	219	19	9	14	22	10	20	16	24	11	30	19	25
	Total.	839	77	50	94	63	59	58	42	104	56	72	51	113
Alexander........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	......	......	......	......	......	....	......	......	....	....	....	....	....
	Country	......	......	......	......	......	......	......	......	....	....	....	....	....
	Total.	......	......	......	......	......	......	......	......	....	....	....	....	....
Bond.............	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	88	11	7	10	7	7	4	9	13	7	5	6	2
	Country	292	24	26	31	15	16	24	19	20	40	27	22	28
	Total.	380	35	33	41	22	23	28	28	33	47	32	28	30
Boone............	Cities...	.....	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	59	10	3	1	2	7	5	7	5	3	9	4	3
	Country	124	7	11	14	10	9	8	9	14	10	17	8	7
	Total.	183	17	14	15	12	16	13	16	19	13	26	12	10
Brown............	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	177	19	16	14	14	16	5	18	9	22	15	13	16
	Country	......	......	......	......	......	......	......	......	....	....	....	....	....
	Total.	177	19	16	14	14	16	5	18	9	22	15	13	16
Bureau...........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	260	10	23	19	19	19	27	24	26	24	28	16	25
	Country	186	13	14	15	19	12	21	24	13	16	14	15	10
	Total.	446	23	37	34	38	31	48	48	39	40	42	31	35
Calhoun	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	......	......	......	......	......	......	......	......	....	..	....	....	....
	Country	104	13	10	4	6	7	9	5	6	7	12	10	15
	Total.	104	13	10	4	6	7	9	5	6	7	12	10	15

Table II.—Continued.

The State and Counties.		The year...	January...	February..	March....	April.....	May......	June......	July......	August....	September.	October....	November.	December..
Carroll...........	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	....	....	....	....	....	....	....	....	....	....	....	....	....
	Country	296	29	20	33	24	21	21	36	13	22	13	19	45
	Total.	296	29	20	33	24	21	21	36	13	22	13	19	45
Cass..............	Cities...	29	4	2	4	....	....	2	3	2	3	3	4	2
	Towns..	124	20	10	10	14	5	14	9	8	8	9	6	11
	Country	90	9	8	9	3	5	4	10	16	9	3	5	9
	Total.	243	33	20	23	17	10	20	22	26	20	15	15	22
Champaign	Cities. .	85	4	11	4	7	14	5	6	9	10	6	6	3
	Towns..	79	7	10	6	3	4	5	6	5	11	8	7	7
	Country	385	30	25	42	23	32	24	41	27	36	45	34	26
	Total.	549	41	46	52	33	50	34	53	41	57	59	47	36
Christian.........	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	....	....	....	....	....	....	....	....	....	....	....	....	....
	Country	534	50	47	60	45	33	34	49	50	40	45	31	50
	Total.	534	50	47	60	45	33	34	49	50	40	45	31	50
Clark.............	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	60	7	8	12	4	3	1	3	2	4	4	5	7
	Country	284	26	20	27	24	18	27	19	30	16	20	25	32
	Total.	344	33	28	39	28	21	28	22	32	20	24	30	39
Clay..............	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	....	....	....	....	....	....	....	....	....	....	....	....	....
	Country	279	22	20	29	24	15	22	16	25	28	25	27	26
	Total.	279	22	20	29	24	15	22	16	25	28	25	27	26
Clinton	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	....	....	....		....	....	....	....	....	....	....	.	....
	Country	490	54	49	47	33	37	22	42	28	35	36	28	79
	Total.	490	54	49	47	33	37	22	42	28	35	36	28	79
Coles.............	Cities...	87	6	6	11	14	7	9	12	2	4	7	5	4
	Towns..	116	10	12	9	9	8	10	11	10	13	7	7	10
	Country	373	32	25	41	28	27	23	30	31	32	39	43	22
	Total.	576	48	43	61	51	42	42	53	43	49	53	55	36
Cook.............	Cities...	17, 973	1426	1413	1621	1391	1338	1413	1524	1684	1583	1526	1470	1584
	Towns..	4806	404	364	473	331	387	416	405	432	431	402	400	361
	Country	....	....	....	....	....	....	....	....	....	....	....	....	....
	Total.	22, 779	1830	1777	2094	1722	1725	1829	1929	2116	2014	1928	1870	1945
Crawford.........	Cities...	....	....	....	....	....	....	....	....	....	....	....	—	....
	Towns .	....	....	....	....	....	....	....	....	....	....	....	....	....
	Country	436	32	39	39	49	30	33	31	27	23	59	28	46
	Total.	436	32	39	39	49	30	33	31	27	23	59	28	46
Cumberland......	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	274	19	25	22	29	19	5	11	23	12	24	23	62
	Country	1	....	1	....	....	....	....	....	....	....	....	....	....
	Total.	275	19	26	22	29	19	5	11	23	12	24	23	62

Table II.—Continued.

The State and Counties.		The year...	January...	February..	March....	April.....	May......	June	July......	August ...	September.	October ...	November.	December..
DeKalb	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	31	5	1	2	2	....	1	1	....	4	6	5	4
	Country	176	21	6	10	13	18	15	15	12	20	15	16	15
	Total.	207	26	7	12	15	18	16	16	12	24	21	21	19
DeWitt	Cities....	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	86	5	10	9	15	6	9	9	7	3	6	3	4
	Country	191	11	33	18	33	11	12	18	8	13	11	9	14
	Total.	277	16	43	27	48	17	21	27	15	16	17	12	18
Douglas	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	98	18	4	17	3	3	1	2	3	8	....	6	33
	Country	143	11	7	14	7	5	9	11	18	22	6	9	24
	Total.	241	29	11	31	10	8	10	13	21	30	6	15	57
DuPage	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	88	2	7	9	6	6	6	9	9	9	7	11	7
	Country	201	14	14	23	15	13	15	22	16	18	24	12	15
	Total.	289	16	21	32	21	19	21	31	25	27	31	23	22
Edgar	Cities...	74	7	4	9	2	1	1	2	6	8	11	3	20
	Towns..	28	....	....	3	....	1	....	2	1	4	6	6	5
	Country	281	28	30	27	26	31	23	28	16	23	20	10	19
	Total.	383	35	34	39	28	33	24	32	23	35	37	19	44
Edwards	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns.	40	1	2	2	2	5	2	1	7	5	9	3	1
	Country	202	20	14	20	21	16	9	14	15	24	17	18	14
	Total.	242	21	16	22	23	21	11	15	22	29	26	21	15
Effingham	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	59	1	1	1	7	11	....	3	3	8	10	11	3
	Country	191	8	13	12	6	18	3	15	30	23	22	13	28
	Total.	250	9	14	13	13	29	3	18	33	31	32	24	31
Fayette	Cities...	....	....	....	....	....		....	....	....	....	....	....	....
	Towns..	206	17	11	27	20	10	13	14	23	19	21	19	12
	Country	43	4	12	4	2	3	2	3	3	1	2	3	4
	Total.	249	21	23	31	22	13	15	17	26	20	23	22	16
Ford	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	94	6	8	16	7	4	6	4	2	7	5	8	21
	Country	51	4	6	14	3	3	2	....	....	2	3	4	10
	Total.	145	10	14	30	10	7	8	4	2	9	8	12	31
Franklin	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	....	....	....	....	....	....	....	....	....	....	....	....	....
	Country	265	18	29	27	22	12	10	20	21	24	32	27	23
	Total.	265	18	29	27	22	12	10	20	21	24	32	27	23
Fulton	Cities...	....	....	....	....	....	....	....	....	....	....	....	....	....
	Towns..	360	10	17	50	34	42	18	19	42	19	12	19	78
	Country	204	7	16	47	10	20	17	16	21	10	15	10	15
	Total.	564	17	33	97	44	62	35	35	63	29	27	29	93

Table II.—Continued.

The State and Counties.		The year...	January...	February...	March....	April.....	May.......	June....	July......	August...	September.	October...	November.	December..
Gallatin.........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	121	8	13	10	7	7	6	7	13	15	17	9	9
	Country	120	8	12	9	8	7	6	8	12	14	18	8	10
	Total.	241	16	25	19	15	14	12	15	25	29	35	17	19
Greene	Cities...	......	......	......	......	......	......	......	......	....	....	....	...	....
	Towns..	77	2	6	8	6	7	5	9	5	6	8	8	7
	Country	138	12	10	3	8	7	14	13	11	16	16	10	18
	Total.	215	14	16	11	14	14	19	22	16	22	24	18	25
Grundy..........	Cities...	......	......	......	......	......	......	......	......	....	....	...	....	....
	Towns..	......	......	......	......	......	......	......	......	....	....	....	....	....
	Country	154	9	10	19	15	16	8	7	10	9	7	24	20
	Total.	154	9	10	19	15	16	8	7	10	9	7	24	20
Hamilton........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	200	15	16	23	14	9	12	14	19	12	20	24	22
	Country	125	15	14	20	11	5	11	11	5	8	18	3	4
	Total.	325	30	30	43	25	14	23	25	24	20	38	27	26
Hancock.........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	150	10	9	18	14	8	20	13	11	19	9	9	10
	Country	335	25	23	18	26	33	29	27	40	36	33	25	20
	Total.	485	35	32	36	40	41	49	40	51	55	42	34	30
Hardin...........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	11	......	......	1	2	1	1	1	3	....	1	1	....
	Country	142	16	14	12	10	12	12	4	9	14	14	5	20
	Total.	153	16	14	13	12	13	13	5	12	14	15	6	20
Henderson.......	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	51	5	1	4	5	3	4	10	4	5	4	2	4
	Country	104	8	3	9	14	10	7	10	16	8	5	6	8
	Total.	155	13	4	13	19	13	11	20	20	13	9	8	12
Henry............	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	204	22	13	25	11	19	10	14	12	11	5	18	44
	Country	300	20	20	22	10	40	28	35	20	40	35	25	5
	Total.	504	42	33	47	21	59	38	49	32	51	40	43	49
Iroquois..........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	134	16	8	12	7	12	12	6	13	14	11	11	12
	Country	301	27	17	34	26	31	20	16	31	27	22	23	27
	Total.	435	43	25	46	33	43	32	22	44	41	33	34	39
Jackson	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	47	3	1	2	3	1	8	......	3	5	3	11	7
	Country	198	10	14	15	22	16	19	7	18	19	20	26	12
	Total.	245	13	15	17	25	17	27	7	21	24	23	37	19
Jasper	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	176	14	12	17	8	7	21	18	32	6	12	12	17
	Country	160	13	13	15	13	7	10	12	17	23	16	10	11
	Total.	336	27	25	32	21	14	31	30	49	29	28	22	28

Table II.—Continued.

The State and Counties.		The year...	January...	February..	March....	April.....	May......	June.. ..	July......	August....	September.	October...	November.	December..
Jefferson	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	297	5	9	20	55	20	21	23	24	13	21	48	38
	Country	......	......	......	......	......	......	......	......	....	....	....	....	....
	Total.	297	5	9	20	55	20	21	23	24	13	21	48	38
Jersey...........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns .	10	2	1	......	......	......	......	......	1	8	....	1	2
	Country	49	......	1	3	3	4	......	3	11	5	5	9	5
	Total.	59	2	2	3	3	4	......	3	12	8	5	10	7
JoDaviess	Cities...	109	8	8	9	8	10	6	6	5	19	8	10	12
	Towns..	16	......	......	......	......	......	......	......	....	2	4	6	4
	Country	131	8	10	13	10	6	11	13	16	6	8	10	20
	Total.	256	16	18	22	18	16	17	19	21	27	20	26	36
Johnson	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	59	9	5	3	8	6	2	7	5	4	4	1	5
	Country	260	35	30	37	29	16	13	5	18	17	20	17	23
	Total.	319	44	35	40	37	22	15	12	23	21	24	18	28
Kane	Cities...	603	50	60	49	54	55	58	72	45	43	61	30	26
	Towns..	90	10	10	11	6	4	8	2	5	8	2	13	11
	Country	169	18	20	16	20	10	10	6	17	22	7	10	13
	Total.	862	78	90	76	80	69	76	80	67	73	70	53	
Kankakee........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	210	30	33	26	21	9	11	18	9	19	22	4	8
	Country	100	13	10	10	9	9	8	5	3	5	6	10	12
	Total.	310	43	43	36	30	18	19	23	12	24	28	14	20
Kendall..........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	70	2	2	10	8	8	10	5	11	2	3	3	6
	Country	109	10	6	8	12	8	16	10	7	9	9	7	7
	Total.	179	12	8	18	20	16	26	15	18	11	12	10	13
Knox.............	Cities...	84	2	4	6	13	4	13	2	3	1	25	8	3
	Towns..	79	15	5	5	... ..	10	11	4	8	6	1	9	5
	Country	165	22	17	15	13	12	16	7	15	6	13	11	18
	Total.	328	39	26	26	26	26	40	13	26	13	39	28	26
Lake.............	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	...
	Towns..	66	14	2	2	5	3	5	4	12	8	5	4	2
	Country	100	7	6	7	9	7	7	6	8	16	7	11	9
	Total.	166	21	8	9	14	10	12	10	20	24	12	15	11
LaSalle..........	Cities...	636	51	65	54	51	47	50	56	51	55	53	49	54
	Towns..	201	16	21	16	13	12	18	20	10	12	20	20	23
	Country	391	30	42	28	32	27	31	33	37	41	34	25	31
	Total.	1,228	97	128	98	96	86	99	109	98	108	107	94	108
Lawrence.......	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	110	9	11	18	10	17	8	6	10	7	7	2	5
	Country	212	10	18	24	16	20	15	20	20	11	14	20	24
	Total.	322	19	29	42	26	37	23	26	30	18	21	22	29

Table II.—Continued.

The State and Counties.		The year....	January	February ...	March	April	May.......	June.......	July	August	September..	October....	November...	December...
Lee..............	Cities,..	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	197	11	9	16	15	9	11	12	13	18	29	26	28
	Country	392	44	44	34	36	34	36	36	28	30	20	26	24
	Total.	589	55	53	50	51	43	47	48	41	48	49	52	52
Livingston.......	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	294	39	29	27	30	18	23	28	18	17	19	26	20
	Country	......	......	......	......	......	......	......	......	....	....	....	....	....
	Total.	294	39	29	27	30	18	23	28	18	17	19	26	20
Logan............	Cities...	165	11	12	24	22	17	8	10	15	12	12	12	10
	Towns..	......	......	......	......	......	......	......	......	....	....	....	....	....
	Country	206	11	14	17	13	15	10	21	26	18	18	13	30
	Total..	371	22	26	41	35	32	18	31	41	30	30	25	40
Macon..........	Cities...	268	30	10	33	22	18	25	24	22	36	15	12	21
	Towns.	98	6	1	18	7	5	5	15	5	7	6	4	19
	Country	212	19	11	22	20	20	12	18	18	17	11	14	30
	Total.	578	55	22	73	49	43	42	57	45	60	32	30	70
Macoupin........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	216	18	22	19	15	19	14	18	19	10	19	24	19
	Country	264	19	26	19	15	28	19	17	25	31	24	25	16
	Total.	480	37	48	38	30	47	33	35	44	41	43	49	35
Madison.........	Cities...	30	......	1	6	6	2	4	2	2	2	3	1	1
	Towns..	266	19	34	32	19	21	7	27	16	32	19	13	27
	Country	273	20	17	27	27	17	15	23	21	19	18	39	30
	Total.	569	39	52	65	52	40	26	52	39	53	40	53	58
Marion...........	Cities...	155	5	10	13	14	9	16	11	14	12	17	15	19
	Towns..	240	9	16	20	21	17	23	18	17	16	28	25	30
	Country	85	8	4	6	8	5	7	5	7	2	14	8	11
	Total.	480	22	30	39	43	31	46	34	38	30	59	48	60
Marshall.........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	112	8	16	7	6	9	10	12	9	6	9	9	11
	Country	141	10	11	21	9	8	7	13	15	11	7	10	19
	Total.	253	18	27	28	15	17	17	25	24	17	16	19	30
Mason............	Cities...	......	.....	......	......	......	......	......	......	....	....	....	....	....
	Towns..	59	4	5	4	4	7	4	6	4	3	6	7	5
	Country	134	8	10	12	18	14	9	11	8	10	11	12	11
	Total.	193	12	15	16	22	21	13	17	12	13	17	19	16
Massac...........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	50	4	6	......	1	5	6	6	3	10	....	6	3
	Country	18	......	5	5	3	1	......	......	....	....	4	....	....
	Total.	68	4	11	5	4	6	6	6	3	10	4	6	3
McDonough......	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	152	8	13	14	6	12	10	14	21	14	15	13	12
	Country	198	17	19	24	17	12	12	22	23	16	12	8	16
	Total.	350	25	32	38	23	24	22	36	44	30	27	21	28

Table II.—Continued.

The State and Counties.		The year....	January	February....	March	April.......	May........	June.......	July	August	September..	October....	November...	December...
McHenry.........	Cities...	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....
	Towns..	126	5	9	9	7	10	10	12	6	12	12	11	23
	Country	99	4	6	2	15	7	6	10	7	11	8	6	17
	Total.	225	9	15	11	22	17	16	22	13	23	20	17	40
McLean..........	Cities...	422	52	28	34	36	39	29	38	28	50	29	37	22
	Towns..	257	29	24	22	27	18	17	22	12	32	27	11	16
	Country	417	39	39	44	35	32	22	24	46	25	40	31	40
	Total.	1,096	120	91	100	98	89	68	84	86	107	96	79	78
Menard...........	Cities...	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....
	Towns..	48	3	2	6	3	6	8	5	2	3	2	5	3
	Country	92	8	12	5	5	8	5	6	12	4	2	10	15
	Total.	140	11	14	11	8	14	13	11	14	7	4	15	18
Mercer...........	Cities...	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....
	Towns..	108	12	11	24	3	6	15	5	6	8	2	8	8
	Country	242	20	20	40	9	11	19	11	10	9	5	45	43
	Total.	350	32	31	64	12	17	34	16	16	17	7	53	51
Monroe..........	Cities...	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....
	Towns..	117	10	17	18	7	10	12	9	6	11	7	5	5
	Country	311	30	30	21	28	19	18	25	45	27	27	22	19
	Total.	428	40	47	39	35	29	30	34	51	38	34	27	24
Montgomery	Cities...	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....
	Towns..	259	26	22	31	16	28	18	25	24	18	17	13	21
	Country	256	17	26	33	19	14	19	26	25	27	23	16	11
	Total.	515	43	48	64	35	42	37	51	49	45	40	29	32
Morgan..........	Cities...	175	7	8	20	13	5	20	22	10	9	17	23	21
	Towns..	17	3	2	.....	.....	4	1	1	1	....	2	1	2
	Country	236	20	16	17	23	27	14	21	12	21	19	16	30
	Total.	428	30	26	37	36	36	35	44	23	30	38	40	53
Moultrie.........	Cities...	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....
	Towns..	101	7	5	6	7	4	5	6	10	8	9	16	18
	Country	216	18	28	27	19	9	18	16	19	13	22	20	7
	Total.	317	25	33	33	26	13	23	22	29	21	31	36	25
Ogle.............	Cities...	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	....
	Towns..	81	8	3	8	15	4	9	11	3	8	1	8	3
	Country	173	9	15	15	16	21	13	22	12	10	19	13	8
	Total.	254	17	18	23	31	25	22	33	15	18	20	21	11
Peoria...........	Cities...	576	28	64	58	34	42	39	60	47	54	62	54	34
	Towns..	94	12	7	23	4	.....	6	5	3	7	10	6	11
	Country	147	22	11	22	10	7	15	5	5	12	14	10	14
	Total.	817	62	82	103	48	49	60	70	55	73	86	70	59
Perry............	Cities...	.....	.....	.....	.....	.....	......	.....	.....	....	....	....	....	....
	Towns..	38	4	8	13	2	1	.....	2	2	3	1	1	1
	Country	83	7	4	17	8	10	4	4	7	7	8	2	5
	Total.	121	11	12	30	10	11	4	6	9	10	9	3	6

Table II.—Continued.

The State and Counties.		The year	January	February	March	April	May	June	July	August	September	October	November	December
Piatt	Cities	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns	281	23	17	31	20	12	26	23	23	26	24	22	34
	Country	......	......	......	......	......	......	......	......	....	....	....	....	....
	Total	281	23	17	31	20	12	26	23	23	26	24	22	34
Pike	Cities	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns	90	8	7	8	6	4	3	7	10	4	7	13	13
	Country	264	13	26	27	24	22	22	23	35	19	29	17	7
	Total	354	21	33	35	30	26	25	30	45	23	36	30	20
Pope	Cities	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns	18	1	1	1	1	2	1	......	2	1	2	3	3
	Country	189	10	12	12	12	12	11	10	15	19	19	24	33
	Total	207	11	13	13	13	14	12	10	17	20	21	27	36
Pulaski	Cities	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns	......	......	......	......	......	......	......	......	....	....	....	....	....
	Country	46	......	1	3	3	2	8	3	7	5	2	7	5
	Total	46	......	1	3	3	2	8	3	7	5	2	7	5
Putnam	Cities	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns	60	9	2	8	4	4	2	6	4	3	5	7	6
	Country	......	......	......	......	......	......	......	......	....	....	....	....	....
	Total	60	9	2	8	4	4	2	6	4	3	5	7	6
Randolph	Cities	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns	85	8	10	8	11	3	3	8	7	7	8	4	8
	Country	314	18	18	29	30	13	21	30	38	27	25	36	29
	Total	399	26	28	37	41	16	24	38	45	34	33	40	37
Richland	Cities	57	4	4	2	7	5	3	8	7	8	5	3	1
	Towns	196	13	26	22	20	18	14	12	18	17	18	13	5
	Country	......	......	......	......	......	......	......	.....	....	....	....	....	....
	Total	253	17	30	24	27	23	17	20	25	25	23	16	6
Rock Island	Cities	549	34	51	79	64	51	31	43	41	40	34	38	43
	Towns	65	12	5	1	2	2	6	4	6	7	4	6	10
	Country	123	12	6	4	3	2	13	18	9	21	7	10	18
	Total	737	58	62	84	69	55	50	65	56	68	45	54	71
Saline	Cities	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns	52	2	......	1	3	......	7	4	3	6	9	5	12
	Country	130	3	2	3	7	3	15	9	19	11	18	14	26
	Total	182	5	2	4	10	3	22	13	22	17	27	19	38
Sangamon	Cities	262	17	20	25	22	13	10	34	24	13	12	8	64
	Towns	7	2	......	......	......	2	......	2	....	....	....	....	1
	Country	301	31	11	36	26	35	18	28	34	14	10	6	52
	Total	570	50	31	61	48	50	28	64	58	27	22	14	117
Schuyler	Cities	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns	202	32	6	29	12	11	19	7	13	15	21	7	30
	Country	......	......	......	......	......	......	......	......	....	....	....	....	....
	Total	202	32	6	29	12	11	19	7	13	15	21	7	30

Table II.—Continued.

The State and Counties.		The year....	January	February ...	March	April	May......	June......	July	August	September..	October....	November..	December..
Scott	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	21	2	1	2	2	3	4	......	2	....	3	....	2
	Country	94	8	9	10	10	3	5	10	12	8	5	3	11
	Total.	115	10	10	12	12	6	9	10	14	8	8	3	13
Shelby	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	84	6	5	17	14	10	2	......	9	6	2	2	11
	Country	259	46	10	39	37	11	13	21	12	15	22	11	22
	Total.	343	52	15	56	51	21	15	21	21	21	24	13	33
Stark	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	8	......	......	......	1	......	......	1	....	....	....	....	6
	Country	43	......	2	4	1	1	6	11	6	3	2	....	7
	Total.	51	......	2	4	2	1	6	12	6	3	2	....	13
St. Clair	Cities...	483	61	36	44	31	17	43	33	44	30	36	59	49
	Towns..	323	37	14	32	22	20	23	29	21	39	19	37	30
	Country	420	21	42	56	35	16	27	26	34	35	37	54	37
	Total.	1226	119	92	132	88	53	93	88	99	104	92	150	116
Stephenson	Cities...	190	23	23	25	4	18	14	19	13	15	8	12	16
	Towns..	111	12	16	11	14	12	5	10	3	6	6	10	6
	Country	194	16	22	14	22	18	11	23	13	12	19	13	11
	Total.	495	51	61	50	40	48	30	52	29	33	33	35	33
Tazewell	Cities...	76	20	9	13	2	3	5	3	7	4	7	....	3
	Towns..	184	33	16	19	19	13	6	6	13	16	11	10	22
	Country	198	33	12	17	18	9	11	12	22	12	11	15	26
	Total.	458	86	37	49	39	25	22	21	42	32	29	25	51
Union	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	59	5	6	7	4	4	3	6	7	9	5	2	1
	Country	198	13	16	19	19	11	12	19	23	18	17	24	7
	Total.	257	18	22	26	23	15	15	25	30	27	22	26	8
Vermilion	Cities...	186	27	23	15	25	13	9	15	8	15	19	9	8
	Towns..	100	6	6	13	11	10	5	12	16	5	6	3	7
	Country	288	19	28	33	33	24	25	25	13	26	22	17	23
	Total.	574	52	57	61	69	47	39	52	37	46	47	29	38
Wabash	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	107	12	6	9	7	8	13	12	11	9	4	5	11
	Country	178	18	11	15	17	11	11	10	24	19	14	14	14
	Total	285	30	17	24	24	19	24	22	35	28	18	19	25
Warren	Cities...	123	13	18	12	7	4	11	10	13	9	15	5	6
	Towns..	52	6	5	3	5	3	......	4	4	7	6	5	4
	Country	244	21	16	28	24	20	19	23	26	23	19	12	13
	Total.	419	40	39	43	36	27	30	37	43	39	40	22	23
Washington	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	110	7	6	17	14	9	6	9	5	12	8	6	11
	Country	242	27	24	25	17	13	16	20	13	26	23	20	18
	Total.	352	34	30	42	31	22	22	29	18	38	31	26	29

Table II.—Continued.

The State and Counties.		The year....	January	February	March	April	May........	June........	July	August	September..	October....	November..	December ..
Wayne...........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	3	......	......	......	......	......	......	......	....	....	....	1	2
	Country	51	......	......	......	......	......	......	......	....	....	5	23	23
	Total.	54	......	......	......	......	......	......	......	....	....	5	24	25
White...........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	130	9	6	28	5	5	12	12	5	12	5	13	18
	Country	226	5	22	32	21	5	15	8	21	21	13	14	49
	Total.	356	14	28	60	26	10	27	20	26	33	18	27	67
Whiteside........	Cities...	170	13	14	11	10	15	7	12	16	15	15	21	21
	Towns..	106	10	5	10	7	2	3	5	12	5	18	15	14
	Country	284	20	12	22	17	14	25	30	18	32	24	30	40
	Total.	560	43	31	43	34	31	35	47	46	52	57	66	75
Will.............	Cities...	202	23	15	16	23	21	11	10	16	9	16	17	25
	Towns..	95	10	4	4	9	5	5	9	9	15	5	5	15
	Country	125	3	7	9	5	11	8	15	8	14	19	8	18
	Total.	422	36	26	29	37	37	24	34	33	38	40	30	58
Williamson	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	105	10	11	12	13	9	8	9	7	4	7	3	12
	Country	371	30	28	27	28	30	32	31	32	22	33	36	42
	Total.	476	40	39	39	41	39	40	40	39	26	40	39	54
Winnebago.......	Cities...	429	28	36	48	45	35	32	38	31	40	32	33	31
	Towns..	183	14	12	10	22	17	13	13	14	12	18	20	18
	Country	46	2	4	3	5	4	2	3	5	6	2	4	6
	Total.	658	44	52	61	72	56	47	54	50	58	52	57	55
Woodford........	Cities...	......	......	......	......	......	......	......	......	....	....	....	....	....
	Towns..	60	6	3	3	4	5	3	5	9	10	4	6	2
	Country	213	14	15	20	19	21	11	15	24	18	26	11	19
	Total.	273	20	18	23	23	26	14	20	33	28	30	17	21

SECTION 2.—BIRTHS IN ILLINOIS, 1886.

TABLE I.—*Births reported for the year 1886:* BY MONTHS, SEX SPECIFIED.

The State and Counties.		The year	January	February	March	April	May	June	July	August	September	October	November	December
Illinois	M	30501	2589	2424	2950	2438	2189	2290	2493	2637	2641	2570	2446	2834
	F	28696	2307	2284	2816	2313	2150	2106	2356	2540	2400	2391	2294	2739
	Total	59197	4896	4708	5766	4751	4339	4396	4849	5177	5041	4961	4740	5573
Adams	M	456	38	34	44	29	38	32	27	52	33	41	27	61
	F	383	39	16	50	34	21	26	15	52	23	31	24	52
	Total	839	77	50	94	63	59	58	42	104	56	72	51	113
Alexander	M	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....
	F	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....
	Total	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....
Bond	M	204	24	18	16	7	11	17	15	20	28	16	12	20
	F	176	11	15	25	15	12	11	13	13	19	16	16	10
	Total	380	35	33	41	22	23	28	28	33	47	32	28	30
Boone	M	104	9	6	7	8	10	7	10	14	8	11	8	6
	F	79	8	8	8	4	6	6	6	5	5	15	4	4
	Total	183	17	14	15	12	16	13	16	19	13	26	12	10
Brown	M	95	12	7	7	8	11	3	6	4	12	8	8	9
	F	82	7	9	7	6	5	2	12	5	10	7	5	7
	Total	177	19	16	14	14	16	5	18	9	22	15	13	16
Bureau	M	221	11	19	14	19	16	22	20	25	18	21	20	16
	F	225	12	18	20	19	15	26	28	14	22	21	11	19
	Total	446	23	37	34	38	31	48	48	39	40	42	31	35
Calhoun	M	62	10	5	3	4	4	6	4	2	5	3	6	10
	F	42	3	5	1	2	3	3	1	4	2	9	4	5
	Total	104	13	10	4	6	7	9	5	6	7	12	10	15

Table I.—Continued.

The State and Counties.		The year	January	February	March	April	May	June	July	August	September	October	November	December
Carroll	M.	160	13	10	17	14	14	12	22	9	12	6	11	20
	F.	136	16	10	16	10	7	9	14	4	10	7	8	25
	Total	296	29	20	33	24	21	21	36	13	22	13	19	45
Cass	M.	124	18	16	8	11	7	9	9	12	11	9	4	10
	F.	119	15	4	15	6	3	11	13	14	9	6	11	12
	Total	243	33	20	23	17	10	20	22	26	20	15	15	22
Champaign	M.	278	25	25	34	17	17	18	26	20	32	26	26	12
	F.	271	16	21	18	16	33	16	27	21	25	33	21	24
	Total	549	41	46	52	33	50	34	53	41	57	59	47	36
Christian	M.	277	25	22	33	22	16	21	22	28	21	18	16	33
	F.	257	25	25	27	23	17	13	27	22	19	27	15	17
	Total	534	50	47	60	45	33	34	49	50	40	45	31	50
Clark	M.	168	12	17	23	16	11	16	7	15	10	7	15	19
	F.	176	21	11	16	12	10	12	15	17	10	17	15	20
	Total	344	33	28	39	28	21	28	22	32	20	24	30	39
Clay	M.	147	12	8	15	16	5	11	6	15	15	16	16	12
	F.	132	10	12	14	8	10	11	10	10	13	9	11	14
	Total	279	22	20	29	24	15	22	16	25	28	25	27	26
Clinton	M.	242	25	24	25	17	19	14	20	12	17	24	10	35
	F.	248	29	25	22	16	18	8	22	16	18	12	18	44
	Total	490	54	49	47	33	37	22	42	28	35	36	28	79
Coles	M.	282	25	23	33	26	18	18	22	20	27	25	26	19
	F.	294	23	20	28	25	24	24	31	23	22	28	29	17
	Total	576	48	43	61	51	42	42	53	43	49	53	55	36
Cook	M.	11718	986	902	1071	862	867	950	1011	1046	1065	988	991	979
	F.	11061	844	875	1023	860	858	879	918	1070	949	940	879	966
	Total	22779	1830	1777	2094	1722	1725	1829	1929	2116	2014	1928	1870	1945
Crawford	M.	217	16	16	21	28	16	18	14	10	11	35	12	20
	F.	219	16	23	18	21	14	15	17	17	12	24	16	26
	Total	436	32	39	39	49	30	33	31	27	23	59	28	46
Cumberland	M.	124	8	17	11	15	6	1	5	9	8	9	7	28
	F.	151	11	9	11	14	13	4	6	14	4	15	16	34
	Total	275	19	26	22	29	19	5	11	23	12	24	23	62
DeKalb	M.	108	12	6	3	6	9	7	10	6	15	13	10	11
	F.	99	14	1	9	9	9	9	6	6	9	8	11	8
	Total	207	26	7	12	15	18	16	16	12	24	21	21	19

Table I.—Continued.

The State and Counties.	The year...	January....	February ..	March	April......	May.......	June	July.......	August	September.	October....	November.	December..
M......	144	6	22	17	27	11	10	11	7	9	6	7	11
DeWitt ....F.......	133	10	21	10	21	6	11	16	8	7	11	5	7
Total	277	16	43	27	48	17	21	27	15	16	17	12	18
M......	124	19	3	12	3	4	7	10	14	7	2	9	34
Douglas.........F.......	117	10	8	19	7	4	3	3	7	23	4	6	23
Total	241	29	11	31	10	8	10	13	21	30	6	15	57
M......	149	9	9	20	12	7	9	14	11	15	20	13	10
DuPage ....F.......	140	7	12	12	9	12	12	17	14	12	11	10	12
Total	289	16	21	32	21	19	21	31	25	27	31	23	22
M......	208	21	14	23	19	16	10	19	12	24	20	9	21
Edgar ....F.......	175	14	20	16	9	17	14	13	11	11	17	10	23
Total	383	35	34	39	28	33	24	32	23	35	37	19	44
M......	122	15	11	9	9	8	7	6	13	19	12	7	6
Edwards........F.......	120	6	5	13	14	13	4	9	9	10	14	14	9
Total	242	21	16	22	23	21	11	15	22	29	26	21	15
M......	129	3	11	9	8	10	3	9	20	14	13	13	16
Effingham.......F.......	121	6	3	4	5	19	......	9	13	17	19	11	15
Total	250	9	14	13	13	29	3	18	33	31	32	24	31
M......	137	11	13	15	15	6	8	12	13	13	12	12	7
Fayette ....F.......	112	10	10	16	7	7	7	5	13	7	11	10	9
Total	249	21	23	31	22	13	15	17	26	20	23	22	16
M......	82	6	8	17	5	4	5	1	......	5	4	7	20
Ford ....F.......	63	4	6	13	5	3	3	3	2	4	4	5	11
Total	145	10	14	30	10	7	8	4	2	9	8	12	31
M......	133	12	15	15	10	9	5	10	11	10	17	10	9
Franklin........F.......	132	6	14	12	12	3	5	10	10	14	15	17	14
Total	265	18	29	27	22	12	10	20	21	24	32	27	23
M......	298	10	21	50	24	33	18	24	34	9	9	20	46
Fulton...........F.	266	7	12	47	20	29	17	11	29	20	18	9	47
Total	564	17	33	97	44	62	35	35	63	29	27	29	93
M......	116	9	14	6	10	7	5	7	8	10	19	10	11
Gallatin ....F.......	125	7	11	13	5	7	7	8	17	19	16	7	8
Total	241	16	25	19	15	14	12	15	25	29	35	17	19
M......	114	7	2	7	6	8	12	16	9	15	9	11	12
Greene..........F.......	101	7	14	4	8	6	7	6	7	7	15	7	13
Total	215	14	16	11	14	14	19	22	16	22	24	18	25

Table I.—Continued.

The State and Counties.		The year....	January	February....	March	April.......	May........	June	July	August	September..	October....	November...	December...
Grundy.........	M......	78	4	5	7	6	7	6	4	4	3	4	16	12
	F.......	76	5	5	12	9	9	2	3	6	6	3	8	8
	Total	154	9	10	19	15	16	8	7	10	9	7	24	20
Hamilton	M......	177	19	19	23	13	5	10	13	13	13	21	11	17
	F.......	148	11	11	20	12	9	13	12	11	7	17	16	9
	Total	325	30	30	43	25	14	23	25	24	20	38	27	26
Hancock.........	M......	253	11	17	16	20	21	29	23	31	34	20	14	17
	F.......	232	24	15	20	20	20	20	17	20	21	22	20	13
	Total	485	35	32	36	40	41	49	40	51	55	42	34	30
Hardin..........	M......	77	11	4	5	7	5	7	2	5	9	11	3	8
	F.......	76	5	10	8	5	8	6	3	7	5	4	3	12
	Total	153	16	14	13	12	13	13	5	12	14	15	6	20
Henderson......	M......	85	8	1	6	13	6	6	9	11	7	7	4	7
	F.......	70	5	3	7	6	7	5	11	9	6	2	4	5
	Total	155	13	4	13	19	13	11	20	20	13	9	8	12
Henry..........	M......	250	23	21	24	9	27	18	18	20	21	19	26	24
	F.......	254	19	12	23	12	32	20	31	12	30	21	17	25
	Total	504	42	33	47	21	59	38	49	32	51	40	43	49
Iroquois	M......	235	24	15	21	18	28	18	14	20	22	18	19	18
	F.......	200	19	10	25	15	15	14	8	24	19	15	15	21
	Total	435	43	25	46	33	43	32	22	44	41	33	34	39
Jackson.........	M......	122	8	7	5	15	7	11	6	11	12	13	17	10
	F.......	123	5	8	12	10	10	16	1	10	12	10	20	9
	Total	245	13	15	17	25	17	27	7	21	24	23	37	19
Jasper..........	M......	169	12	15	20	9	7	13	17	23	15	13	11	14
	F.......	167	15	10	12	12	7	18	13	26	14	15	11	14
	Total	336	27	25	32	21	14	31	30	49	29	28	22	28
Jefferson.......	M......	149	1	4	8	29	12	12	11	9	5	10	28	20
	F.......	148	4	5	12	26	8	9	12	15	8	11	20	18
	Total	297	5	9	20	55	20	21	23	24	13	21	48	38
Jersey..........	M......	30	1	2	2	......	2	......	1	7	3	3	4	5
	F.......	29	1	......	1	3	2	......	2	5	5	2	6	2
	Total	59	2	2	3	3	4	......	3	12	8	5	10	7
JoDaviess	M......	133	6	12	16	7	8	4	12	10	16	14	8	20
	F.......	123	10	6	6	11	8	13	7	11	11	6	18	16
	Total	256	16	18	22	18	16	17	19	21	27	20	26	36

Table I.—Continued.

The State and Counties.		The year....	January	February ...	March	April	May.........	June.........	July.........	August	September..	October....	November...	December...
Johnson........	M......	160	21	18	20	17	12	6	6	13	10	12	10	15
	F.......	159	23	17	20	20	10	9	6	10	11	12	8	13
	Total	319	44	35	40	37	22	15	12	23	21	24	18	28
Kane............	M......	447	41	44	42	37	39	39	38	36	41	34	30	26
	F.......	415	37	46	34	43	30	37	42	31	32	36	23	24
	Total	892	78	90	76	80	69	76	80	67	73	70	53	50
Kankakee.......	M......	153	25	22	19	12	10	11	5	5	10	15	7	12
	F.......	157	18	21	17	18	8	8	18	7	14	13	7	8
	Total	310	43	43	36	30	18	19	23	12	24	28	14	28
Kendall.........	M......	92	5	5	8	12	10	9	8	11	8	7	3	6
	F.......	87	7	3	10	8	6	17	7	7	3	5	7	7
	Total	179	12	8	18	20	16	26	15	18	11	12	10	13
Knox...........	M......	179	21	12	16	15	14	24	6	14	10	20	15	12
	F.......	149	18	14	10	11	12	16	7	12	3	19	13	14
	Total	328	39	26	26	26	26	40	13	26	13	39	28	26
Lake............	M ...	78	8	2	4	6	4	7	4	9	14	9	6	5
	F.......	88	13	6	5	8	6	5	6	11	10	3	9	6
	Total	166	21	8	9	14	10	12	10	20	24	12	15	11
LaSalle.........	M......	669	53	68	56	56	44	51	59	55	60	58	51	58
	F.......	559	44	60	42	40	42	48	50	43	48	49	43	50
	Total	1,228	97	128	98	96	86	99	109	98	108	107	94	108
Lawrence.......	M......	171	12	21	27	16	17	12	11	15	8	8	9	15
	F.......	151	7	8	15	10	20	11	15	15	10	13	13	14
	Total	322	19	29	42	26	37	23	26	30	18	21	22	29
Lee.............	M......	302	27	26	26	29	29	30	21	20	21	28	27	18
	F.......	287	28	27	24	22	14	17	27	21	27	21	25	34
	Total	589	55	53	50	51	43	47	48	41	48	49	52	52
Livingston......	M......	143	22	15	6	15	9	12	18	10	7	7	11	11
	F.......	151	17	14	21	15	9	11	10	8	10	12	15	9
	Total	294	39	29	27	30	18	23	28	18	17	19	26	20
Logan..........	M......	170	8	19	20	13	13	8	14	17	16	12	12	18
	F.......	201	14	7	21	22	19	10	17	24	14	18	13	22
	Total	371	22	26	41	35	32	18	31	41	30	30	25	40
Macon..........	M......	299	30	10	35	30	16	21	33	22	35	19	17	31
	F.......	279	25	12	38	19	27	21	24	23	25	13	13	39
	Total	578	55	22	73	49	43	42	57	45	60	32	30	70

Table I.—Continued.

The State and Counties.		The year...	January...	February...	March.....	April......	May........	June......	July........	August....	September..	October....	November..	December...
	M......	216	16	26	20	16	20	18	20	21	22	22	20	25
Macoupin.......	F.......	234	21	22	18	14	27	15	15	23	19	21	29	10
	Total	480	37	48	38	30	47	33	35	44	41	43	49	35
	M......	288	16	28	35	24	16	11	23	19	28	24	30	34
Madison........	F.......	281	23	24	30	28	24	15	29	20	25	16	23	24
	Total	569	39	52	65	52	40	26	52	39	53	40	53	58
	M......	279	16	18	20	28	18	26	15	24	18	34	30	32
Marion.........	F.......	201	6	12	19	15	13	20	19	14	12	25	18	28
	Total	480	22	30	39	43	31	46	34	38	30	59	48	60
	M......	128	12	15	16	7	12	7	13	7	10	12	3	14
Marshall........	F.......	125	6	12	12	8	5	10	12	17	7	4	16	16
	Total	253	18	27	28	15	17	17	25	24	17	16	19	30
	M......	102	9	8	7	11	11	6	10	6	7	7	12	8
Mason..........	F.......	91	3	7	9	11	10	7	7	6	6	10	7	8
	Total	193	12	15	16	22	21	13	17	12	13	17	19	16
	M......	25	2	5	4	2	4	2	3	2	5	2	1	3
Massac..........	F.......	33	2	6	1	2	2	4	3	1	5	2	5	....
	Total	68	4	11	5	4	6	6	6	3	10	4	6	3
	M......	183	10	16	21	14	13	15	14	20	18	11	15	16
McDonough....	F.......	167	15	16	17	9	11	7	22	24	12	16	6	12
	Total	350	25	32	38	23	24	22	36	44	30	27	21	28
	M......	112	4	7	4	9	10	8	14	7	9	8	11	21
McHenry.......	F.......	113	5	8	7	13	7	8	8	6	14	12	6	19
	Total	225	9	15	11	22	17	16	22	13	23	20	17	40
	M	553	62	45	48	53	40	30	42	50	50	50	40	43
McLean.........	F.......	543	58	46	52	45	49	38	42	36	57	46	39	35
	Total	1,096	120	91	100	98	89	68	84	86	107	96	79	78
	M......	68	5	7	6	3	6	9	3	5	5	3	7	9
Menard...... ..	F.......	72	6	7	5	5	8	4	8	9	2	1	8	9
	Total	140	11	14	11	8	14	13	11	14	7	4	15	18
	M......	186	14	12	40	6	7	21	9	10	6	3	28	30
Mercer..........	F,......	164	18	19	24	6	10	13	7	6	11	4	25	21
	Total	350	32	31	64	12	17	34	16	16	17	7	53	51
	M......	221	24	24	23	13	22	17	19	25	22	12	11	9
Monroe.........	F.......	207	16	23	16	22	7	13	15	26	16	22	16	15
	Total	428	40	47	39	35	29	30	34	51	38	34	27	24

Table I—Continued.

The State and Counties.		The year	January	February	March	April	May	June	July	August	September	October	November	December
Montgomery	M	265	20	22	33	21	21	20	28	24	26	22	14	14
	F	250	23	26	31	14	21	17	23	25	19	18	15	18
	Total	515	43	48	64	35	42	37	51	49	45	40	29	32
Morgan	M	217	16	8	18	16	18	18	23	12	13	26	19	30
	F	211	14	18	9	20	18	17	21	11	17	12	21	23
	Total	428	30	26	27	36	36	35	44	23	30	38	40	53
Moultrie	M	167	15	17	19	12	7	12	11	19	9	18	15	13
	F	150	10	16	14	14	6	11	11	10	12	13	21	12
	Total	317	25	33	33	26	13	23	22	29	21	31	36	25
Ogle	M	134	9	10	12	15	15	10	14	9	13	13	9	5
	F	120	8	8	11	16	10	12	19	6	5	7	12	6
	Total	254	17	18	23	31	25	22	33	15	18	20	21	11
Peoria	M	423	34	41	48	21	27	37	36	29	39	47	35	29
	F	394	28	41	55	27	22	23	34	26	34	39	35	30
	Total	817	62	82	103	48	49	60	70	55	73	86	70	59
Perry	M	62	6	5	14	8	4	3	2	3	7	5	2	3
	F	59	5	7	16	2	7	1	4	6	3	4	1	3
	Total	121	11	12	30	10	11	4	6	9	10	9	3	6
Piatt	M	143	10	8	16	9	6	15	11	10	14	16	12	16
	F	138	13	9	15	11	6	11	12	13	12	8	10	18
	Total	281	23	17	31	20	12	26	23	23	26	24	22	34
Pike	M	186	11	15	21	18	11	11	12	22	16	24	11	14
	F	168	10	18	14	12	15	14	18	23	7	12	19	6
	Total	354	21	33	35	30	26	25	30	45	23	36	30	20
Pope	M	108	5	4	8	6	6	6	6	9	13	13	10	22
	F	99	6	9	5	7	8	6	4	8	7	8	17	14
	Total	207	11	13	13	13	14	12	10	17	20	21	27	36
Pulaski	M	22	......	1	1	3	1	3	2	5	2	....	2	2
	F	24	......	......	2	......	1	5	1	2	3	2	5	3
	Total	46	......	1	3	3	2	8	3	7	5	2	7	5
Putnam	M	27	3	1	5	1	3	2	2	1	1	3	3	2
	F	33	6	1	3	3	1	......	4	3	2	2	4	4
	Total	60	9	2	8	4	4	2	6	4	3	5	7	6
Randolph	M	210	15	18	19	20	7	14	18	24	17	16	22	20
	F	189	11	10	18	21	9	10	20	21	17	17	18	17
	Total	399	26	28	37	41	16	24	38	45	34	33	40	37

Table I.—Continued.

The State and Counties.		The year....	January	February ...	March	April	May.........	June........	July	August	September..	October....	November..	December...
Richland	M......	126	13	16	20	9	10	10	12	13	8	15	7	3
	F.......	127	4	14	14	18	13	7	8	12	17	8	9	3
	Total	253	17	30	24	27	23	17	20	25	25	23	16	6
Rock Island	M......	369	32	29	38	33	31	28	28	29	35	24	24	38
	F.......	368	26	33	46	36	24	22	37	27	33	21	30	33
	Total	737	58	62	84	69	55	50	65	56	68	45	54	71
Saline	M......	89	2	2	1	4	1	9	7	16	5	15	10	17
	F......	93	3	......	3	6	2	13	6	6	12	12	9	21
	Total	182	5	2	4	10	3	22	13	22	17	27	19	38
Sangamon	M......	299	28	16	31	29	26	13	33	34	15	9	7	58
	F.......	271	22	15	30	19	24	15	31	24	12	13	7	59
	Total	570	50	31	61	48	50	28	64	58	27	22	14	117
Schuyler	M......	107	15	5	12	8	5	13	4	10	6	9	4	16
	F.......	95	17	1	17	4	6	6	3	3	9	12	3	14
	Total	202	32	6	29	12	11	19	7	13	15	21	7	30
Scott	M......	62	5	5	8	6	3	6	4	8	4	5	....	8
	F.......	53	5	5	4	6	3	3	6	6	4	3	3	5
	Total	115	10	10	12	12	6	9	10	14	8	8	3	13
Shelby	M......	169	25	8	28	23	15	7	9	10	13	13	7	11
	F......	174	27	7	28	28	6	8	12	11	8	11	6	22
	Total	343	52	15	56	51	21	15	21	21	21	24	13	33
Stark.	M......	25	......	2	1	1	......	5	6	4	1	1	....	4
	F.......	26	......	......	3	1	1	1	6	2	2	1	....	9
	Total	51	......	2	4	2	1	6	12	6	3	2	....	13
St. Clair	M......	646	64	45	75	43	35	45	47	54	52	50	80	56
	F.......	580	55	47	57	45	18	48	41	45	52	42	70	60
	Total	1226	119	92	132	88	53	93	88	99	104	92	150	116
Stephenson	M......	251	19	33	19	20	24	18	28	18	16	18	18	20
	F.......	244	32	28	31	20	24	12	24	11	17	15	17	13
	Total	495	51	61	50	40	48	30	52	29	33	33	35	33
Tazewell	M......	226	42	19	20	22	12	12	12	18	12	13	16	28
	F.......	232	44	18	29	17	13	10	9	24	20	16	9	23
	Total	458	86	37	49	39	25	22	21	42	32	29	25	51
Union	M......	127	9	12	14	10	5	8	15	15	12	7	14	6
	F.......	130	9	10	12	13	10	7	10	15	15	15	12	2
	Total	257	18	22	26	23	15	15	25	30	27	22	26	8

Table I.—Continued.

The State and Counties.		The year....	January	February ...	March	April........	May.........	June........	July	August	September..	October.....	November...	December...
	M......	288	25	30	27	34	25	16	34	19	20	17	19	22
Vermilion	F.......	286	27	27	34	35	22	23	28	18	26	30	10	16
	Total	574	52	57	61	69	47	39	52	37	46	47	29	38
	M......	136	16	7	8	12	9	14	14	15	9	13	9	10
Wabash	F.......	149	14	10	16	12	10	10	8	20	19	5	10	15
	Total	285	30	17	24	24	19	24	22	35	28	18	19	25
	M......	222	25	21	22	23	11	18	16	18	22	22	13	11
Warren.........	F.......	197	15	18	21	13	16	12	21	25	17	18	9	12
	Total	419	40	39	43	36	27	30	37	43	39	40	22	23
	M.....	183	20	16	27	20	10	9	16	11	15	16	10	13
Washington	F.......	169	14	14	15	11	12	13	13	7	23	15	16	16
	Total	352	34	30	42	31	22	22	29	18	38	31	26	29
	M......	30	......	......	......	......	......	......	......	......	....	3	16	11
Wayne..........	F.......	24	......	......	......	......	......	......	......	......	...	2	8	14
	Total	54	......	......	......	......	......	......	......	......	....	5	24	25
	M......	183	6	11	37	15	4	10	12	16	22	7	12	31
White...........	F.......	173	8	17	23	11	6	17	8	10	11	11	15	36
	Total	356	14	28	60	26	10	27	20	26	33	18	27	67
	M......	323	25	17	22	17	19	22	25	25	35	34	36	46
Whiteside.......	F.......	237	18	14	21	17	12	13	21	21	17	23	30	29
	Total	560	43	31	43	34	31	35	47	46	52	57	66	75
	M......	210	18	15	12	21	18	10	19	18	19	21	12	27
Will	F.......	212	18	11	17	16	19	14	15	15	19	19	18	31
	Total	422	36	26	29	37	37	24	34	33	38	40	30	58
	M......	244	23	15	20	24	18	24	20	18	11	23	19	30
Williamson.....	F.......	232	17	24	19	17	21	17	20	21	15	17	20	24
	Total	476	40	39	39	41	39	41	40	39	26	40	39	54
	M......	318	22	25	34	40	23	21	25	27	24	26	28	23
Winnebago.....	F.......	340	22	27	27	32	33	26	29	23	34	26	29	32
	Total	658	44	52	61	72	56	47	54	50	58	52	57	55
	M......	139	11	12	9	11	10	7	9	16	17	17	11	9
Woodford	F.......	134	9	6	14	12	16	7	11	17	11	13	6	12
	Total	273	20	18	23	23	26	14	20	33	28	30	17	21

TABLE III.—*Births reported for the year 1886:* NATIONALITIES OF PARENTS—*"F," Fathers; "M," Mothers.*

The State and Counties.	All nationalities......	American...	British American.	English....	Irish.......	Scotch.....	German....	Scandinavian......	Polish	French.....	Italians.....	Miscellaneous	Not given...
Illinois ......F..	59,197	30,262	743	1,574	2,736	467	13,001	3,506	1,026	356	338	2,523	2,665
M.	59,197	32,462	650	1,270	2,561	376	11,908	3,542	1,010	297	307	2,445	2,369
Adams ......F..	839	477	......	9	20	......	261	2	......	......	1	6	63
M.	839	523	......	5	20	......	230	2	......	1	1	3	54
Alexander ...F..	446	283	1	26	9	6	47	47	1	......	4	8	14
M.	446	292	......	23	15	6	42	46	1	1	4	4	12
Bond.........F..	380	308	......	8	3	1	34	......	......	3	......	14	9
M.	380	324	......	8	3	......	32	......	......	1	......	10	2
Boone ....F..	183	103	4	18	19	8	7	12	......	......	......	4	8
M.	183	103	2	14	23	4	16	11	......	......	......	3	7
Brown.......F..	177	165	......	......	3	......	9	......	......	......	......	......	......
M.	177	163	......	......	3	......	10	......	......	......	......	......	1
Bureau ......F..	......	......	......	......	......	......	......	......	......	......	......	......	......
M.	......	......	......	......	......	......	......	......	......	......	......	......	......
Calhoun .....F..	104	82	......	......	2	......	11	1	......	1	......	1	6
M.	104	82	......	......	......	......	14	......	......	2	......	1	5
Carroll ......F..	296	221	8	5	8	2	33	5	......	4	......	......	10
M.	296	241	3	2	5	2	26	6	......	2	......	......	9
Cass..........F .	243	158	......	2	15	1	39	......	......	......	......	3	25
M.	243	165	......	2	11	......	25	......	......	......	......	6	34
Champaign...F..	549	428	1	12	30	4	56	9	......	......	......	1	8
M.	549	432	3	9	35	1	53	7	......	1	......	1	7
Christian.....F..	534	421	......	9	19	1	52	5	3	3	......	......	21
M.	534	439	1	8	8	5	47	5	1	......	......	1	19
Clark.........F.	344	293	......	15	6	......	11	......	......	......	......	......	19
M.	344	304	......	8	7	......	14	......	......	......	......	......	11
Clay ....F..	279	240	......	4	1	2	9	......	......	2	......	1	20
M	279	250	......	1	......	......	6	......	......	......	......	......	22
Clinton ......F..	490	176	......	1	4	2	260	......	......	10	......	14	23
M.	490	219	1	1	5	3	223	......	......	2	......	10	26
Coles ....F..	576	526	3	7	10	4	10	2	......	1	......	......	13
M.	576	536	1	5	7	2	11	1	......	1	......	......	12
Cook.........F..	22,779	4,858	533	664	1,620	180	7,795	2,399	988	76	304	2.002	1,360
M.	22,779	5,779	490	543	1,543	145	7,436	2,454	975	66	287	2,032	1,029
Crawford ....F..	436	426	......	1	......	......	......	......	......	......	......	......	9
M.	436	427	......	......	......	......	......	......	......	......	......	......	9

Table III.—Continued.

The State and Counties.		All nationalities......	American...	British American.	English....	Irish......	Scotch......	German....	Scandinavian......	Polish.....	French.....	Italians.....	Miscellaneous......	Not given...
Cumberland.	F..	275	275	......	......	......	......	......	......	......	......	......	......	......
	M.	275	275	......	......	......	......	......	......	......	......	......	......	......
DeKalb......	F..	207	108	3	10	8	7	39	20	......	2	......	1	9
	M.	207	124	2	6	9	4	28	21	......	......	......	1	12
DeWitt......	F..	277	228	3	9	9	5	5	3	......	1	......	1	13
	M.	277	238	......	8	9	4	6	......	......	1	......	......	11
Douglas......	F..	241	210	......	3	4	......	17	......	......	......	......	......	7
	M.	241	210	......	3	4	......	15	......	......	......	......	......	9
DuPage......	F..	289	131	4	12	5	4	124	6	......	......	......	......	3
	M.	289	136	5	5	5	5	124	5	......	......	......	......	4
Edgar........	F..	383	336	......	23	6	......	5	......	......	1	......	1	11
	M.	383	342	......	18	7	......	8	......	......	......	......	......	8
Edwards.....	F..	242	192	......	19	3	......	20	......	......	......	......	1	7
	M.	242	212	......	14	1	1	9	......	......	......	......	1	4
Effingham....	F..	250	169	......	1	3	......	71	......	1	......	......	......	5
	M.	250	180	......	......	1	......	59	......	3	1	......	......	6
Fayette......	F..	249	211	......	1	3	......	25	......	......	2	......	......	7
	M.	249	217	......	1	1	......	23	......	......	......	......	1	6
Ford.........	F..	145	68	1	5	7	1	24	33	......	......	......	2	4
	M.	145	72	......	7	8	2	21	31	......	......	......	......	4
Franklin.....	F..	265	254	......	......	......	1	......	......	......	......	......	1	9
	M.	265	259	......	......	......	......	......	......	......	......	......	......	6
Fulton........	F.	564	499	......	16	8	3	12	4	......	......	......	1	12
	M.	564	481	......	16	7	2	10	3	......	......	......	1	44
Gallatin.....	F..	241	222	......	2	1	1	5	......	......	......	......	1	9
	M.	241	232	......	2	......	1	3	......	......	......	......	......	3
Greene.......	F..	215	187	......	4	7	2	8	......	......	......	......	1	6
	M.	215	190	......	2	7	1	8	......	1	......	......	1	5
Grundy......	F..	154	66	6	15	15	15	11	16	......	2	......	6	2
	M.	154	84	3	12	14	10	9	15	......	1	......	6	......
Hamilton....	F..	325	298	......	2	1	......	17	......	......	1	......	......	6
	M.	325	306	......	......	1	11	......	......	......	1	......	......	6
Hancock.....	F..	485	402	1	6	7	3	48	1	......	6	1	1	9
	M.	485	414	......	6	7		40	1	......	5	......	6	5
Hardin.......	F..	153	133	......	......	2	......	3	......	......	1	......	2	12
	M.	153	131	......	......	1	......	2	......	......	1	......	......	18
Henderson...	F..	155	123	1	10	7	1	5	7	......	......	......	......	1
	M.	155	124	2	8	4	2	5	7	......	......	......	......	3
Henry........	F..	504	218	1	30	14	5	70	125	......	2	......	27	12
	M.	504	246	......	24	11	3	61	121	......	2	......	24	12
Iroquois.....	F..	435	253	11	15	11	2	77	......	......	29	......	28	9
	M.	435	276	5	11	12	3	63	......	......	32	......	23	10
Jackson......	F..	245	209	2	3	1	1	18	......	......	1	......	1	9
	M.	245	221	......	3	......	1	9	......	......	......	......	2	9
Jasper.......	F..	336	305	......	......	......	......	12	......	......	1	......	5	13
	M.	336	314	......	......	......	......	7	......	......	1	......	1	13
Jefferson....	F..	297	282	2	2	......	2	4	......	1	......	1	......	3
	M.	297	282	......	1	1	1	4	......	1	......	......	2	5

Table III.—Continued.

The State and Counties.	All nationalities......	American.	British American.	English....	Irish.......	Scotch......	German	Scandinavian	Polish	French.....	Italians.....	Miscellaneous	Not given...
Jersey........F..	59	46	......	......	1	......	8	......	......	......	......	......	4
M.	59	51	......	......	......	......	7	......	......	......	......	......	1
JoDaviess....F..	256	162	2	13	19	10	39	1	3	3	......	2	2
M.	256	175	1	12	13	4	45	......	......	......	......	......	6
Johnson .....F..	319	296	......	1	1	......	3	......	......	......	......	1	17
M.	319	295	......	......	1	......	......	......	......	......	......	1	22
Kane.........F..	862	451	22	37	33	22	186	61	......	13	......	25	12
M.	862	445	20	36	54	13	198	52	1	6	1	27	9
Kankakee ...F..	310	97	1	3	21	5	70	......	2	86	......	23	2
M.	310	96	......	9	7	5	85	......	1	93	2	9	3
Kendall......F..	179	92	3	4	9	2	29	9	......	......	......	22	9
M.	179	92	3	3	9	3	27	13	......	1	......	21	7
Knox.........F..	328	226	7	8	9	4	10	52	......	1	1	......	10
M.	328	242	2	1	11	4	7	52	......	2	......	......	7
Lake........ F..	166	121	2	7	7	2	19	2	......	1	......	5	......
M.	166	128	3	4	5	1	16	3	......	2	......	3	1
LaSalle .....F..	1,228	535	8	89	108	29	331	77	3	17	......	10	21
M.	1,228	582	5	81	115	27	310	74	5	4	1	5	19
Lawrence....F..	322	308	2	......	4	......	3	......	......	......	......	......	5
M.	322	311	1	1	1	1	3	......	......	......	......	......	4
Lee...........F..	589	320	10	29	79	15	59	9	......	20	......	13	35
M.	589	323	10	27	77	15	57	9	......	20	......	13	38
Livingston ..F..	294	176	1	22	11	6	48	9	......	2	......	7	12
M.	294	191	4	12	15	1	47	5	......	1	......	6	12
Logan ....F..	371	247	7	......	29	1	71	1	1	1	.....	9	4
M.	371	253	......	......	32	2	73	......	1	......	......	6	4
Macon ....F..	578	461	2	7	28	4	44	......	1	......	......	2	29
M.	578	491	3	8	24	1	25	......	......	......	......	1	25
Macoupin....F..	480	362	1	23	7	......	74	1	.....	1	......	2	9
M.	480	394	......	17	4	2	55	1	......	1	......	......	6
Madison .....F..	569	280	......	16	4	1	185	......	......	8	7	41	27
M.	569	324	......	16	4	1	127	......	......	6	3	31	57
Marion ......F..	480	401	......	19	7	1	27	......	1	2	......	9	13
M.	480	408	.....	14	9	1	27	......	1	2	......	7	11
Marshall.....F..	253	166	1	12	12	6	43	6	3	1	1	......	2
M.	253	188	2	9	11	3	30	5	3	1	......	......	1
Mason ....F..	193	144	1	5	2	......	35	2	......	1	......	......	3
M.	193	154	......	5	......	......	32	......	......	......	......	......	2
Massac.......F..	68	60	......	......	......	......	6	......	......	......	......	1	1
M.	68	61	......	......	......	......	6	......	......	......	......	......	1
McDonough .F..	350	315	6	12	2	4	5	3	......	......	......	1	2
M.	350	324	1	11	2	4	2	2	.....	......	......	1	3
McHenry ....F..	225	148	1	7	8	2	48	7	......	......	......	......	4
M.	225	144	8	3	8	3	44	5	......	2	......	.....	8
McLean......F..	1,096	736	10	18	46	12	197	31	1	4	.....	16	25
M.	1,096	771	7	19	37	9	185	34	3	1	......	13	17
Menard......F..	140	106	3	3	3	......	16	6	......	1	....	......	2
M.	140	113	1	2	1	......	16	5	......	1	......	......	1

Table III.—Continued.

The State and Counties.		All nationalities......	American...	British American.	English.....	Irish........	Scotch......	German.....	Scandinavian......	Polish.....	French.....	Italians.....	Miscellaneous.......	Not given...
Mercer........	F..	350	268	2	14	9	7	8	30	......	......	......	2	10
	M.	350	283	2	14	7	5	3	26	......	......	......	2	8
Monroe......	F..	428	294	......	2	5	......	114	......	......	I	......	3	9
	M.	428	360	......	1	1	......	55	......	......	2	......	4	5
Montgomery.	F..	515	429	......	8	18	2	40	1	1	......	......	5	11
	M.	515	456	......	5	11	1	26	......	......	......	......	2	14
Morgan......	F..	428	256	......	14	23	2	29	......	......	1	......	42	61
	M.	428	285	......	7	20	2	23	......	......	......	......	32	59
Moultrie.....	F..	317	169	......	2	2	......	7	......	......	......	......	......	137
	M.	317	163	......	2	......	......	3	......	......	......	......	......	149
Ogle..........	F..	254	155	2	12	7	3	45	12	1	2	......	6	9
	M.	254	158	3	8	9	4	34	9	......	1	......	5	23
Peoria.......	F..	817	446	5	15	50	9	237	15	2	2	......	18	18
	M.	817	472	5	12	45	7	229	15	2	1	......	12	17
Perry........	F..	121	82	......	1	2	......	34	......	1	......	......	......	1
	M.	121	86	......	1	1	......	32	......	1	......	......	......	......
Piatt.........	F..	281	189	1	5	15	......	18	......	......	......	......	3	50
	M.	281	189	......	4	15	......	17	......	......	......	......	1	55
Pike.........	F..	354	302	......	13	10	......	15	......	......	......	......	......	14
	M.	354	307	......	8	12	......	11	......	......	......	......	......	16
Pope.........	F..	207	186	......	1	......	......	18	......	......	......	......	......	2
	M.	207	191	......	1	......	......	13	......	......	......	......	......	2
Pulaski......	F..	46	40	......	......	3	......	3	......	......	......	......	......	......
	M.	46	39	......	......	5	......	......	2	......	......	......	......	......
Putnam......	F..	60	50	......	......	......	......	5	4	......	......	......	......	1
	M.	60	49	......	......	2	......	5	3	......	......	......	......	1
Randolph....	F..	399	252	......	4	14	2	114	......	4	2	2	......	5
	M.	399	274	......	1	8	2	103	......	2	4	......	......	5
Richland... .	F..	253	165	......	6	2	......	30	......	......	......	......	2	48
	M.	253	167	......	......	5	......	27	......	......	......	......	4	50
Rock Island..	F..	737	322	7	21	35	2	179	148	1	......	......	8	14
	M.	737	333	6	18	19	1	177	149	1	......	......	14	19
Saline........	F..	182	170	......	4	1	......	2	......	......	......	......	......	5
	M.	182	180	......	1	......	......	......	......	......	......	......	......	1
Sangamon....	F..	570	386	......	21	31	2	95	3	......	2	......	4	26
	M.	570	428	1	15	25	2	74	1	......	2	......	3	19
Schuyler.....	F..	202	188	1	4	1	......	4	......	......	......	......	......	4
	M.	202	198	......	1	1	......	1	......	......	......	......	......	1
Scott.........	F..	115	98	1	1	5	2	7	......	......	......	......	......	1
	M.	115	103	......	2	4	1	5	......	......	......	......	......	......
Shelby.......	F..	343	298	......	4	4	1	21	......	......	1	......	1	13
	M.	343	281	......	4	6	......	14	......	......	......	......	1	37
Stark........	F..	51	39	2	......	6	......	1	2	......	......	......	1	......
	M.	51	40	......	2	6	1	......	1	......	......	......	1	......
St. Clair.....	F..	1,226	822	2	24	13	2	296	......	......	14	5	12	36
	M.	1,226	976	3	19	5	1	175	......	......	7	......	9	31
Stephenson..	F..	495	326	4	10	7	......	122	......	......	......	......	19	7
	M.	495	341	1	4	7	......	126	......	......	......	......	9	7

Table III.—Continued.

The State and Counties.		All nationalities....	American...	British American..	English....	Irish.......	Scottish....	German....	Scandinavian......	Polish......	French,....	Italians....	Miscellaneous.......	Not given...
Tazewell.....	F..	458	297	1	6	10	1	123	......	......	5	......	7	8
	M.	458	318	3	4	8	2	107	......	......	5	......	3	8
Union.......	F..	257	220	......	1	3	......	20	......	......	......	......	......	13
	M.	257	231	......	1	3	......	12	......	......	......	......	......	10
Vermilion....	F..	274	450	4	13	10	......	66	14	......	4	......	4	9
	M.	574	473	1	10	3	......	56	13	......	4	......	6	8
Wabash......	F..	285	246	......	3	2	......	27	......	......	......	.....	2	5
	M.	285	260	......	......	1	...	12	......	......	......	......	1	11
Warren......	F..	419	335	8	7	16	5	4	27	......	......	......	9	8
	M.	419	349	7	6	11	3	4	29	......	......	......	5	5
Washington .	F..	352	157	......	2	2	2	179	1	2	......	......	2	5
	M.	352	197	......	1	1	......	147	......	2	......	......	......	4
Wayne.......	F..	54	52	......	......	......	1	......	......	......	......	......	......	1
	M.	54	53	......	......	......	......	......	......	......	......	......	......	1
White........	F..	356	320	......	2	......	1	22	......	......	......	......	2	9
	M.	356	328	......	.....	......	......	15	......	......	......	......	......	13
Whiteside....	F..	560	399	8	9	33	5	80	11	......	1	......	10	4
	M.	560	420	10	8	25	2	70	12	......	1	......	12	......
Will.........	F..	422	136	8	11	32	13	107	10	5	3	9	26	61
	M.	422	162	7	13	34	8	94	10	5	3	6	27	53
Williamson..	F..	476	452	......	1	1	3	9	......	......	......	......	......	10
	M.	476	462	......	1	......	2	4	......	......	......	......	......	7
Winnebago..	F..	658	301	12	22	17	11	34	254	.....	3	2	......	2
	M.	658	268	11	25	23	13	39	275	..	......	2	1	1
Woodford...	F..	273	165	......	6	6	1	76	......	......	4	......	12	3
	M.	273	181	1	5	3	1	72	......	1	2	......	7	......

TABLE IV.—*Births reported for the year 1886:* GROUPED AGES OF PARENTS. *"F," Father; "M," Mother.*

The State and Counties.	All ages	Under 15....	16–20........	21–25........	26–30........	31–35........	36–40........	41–45........	46–50........	51–55........	56–60........	Over 60....	Not given ..
Illinois.......F..	59,197	......	76	8,055	15,603	11,679	8,863	4,945	2,411	866	496	57	6,146
M.	59,197	1	5,445	15,811	15,071	8,904	5,801	2,063	326	56	10	8	5,701
Adams.......F..	839	......	......	130	208	144	128	81	36	13	1	......	98
M.	839	......	53	208	206	133	93	39	5	......	......	......	102
Alexander....F..	......	......	......	......	......	......	......	......	......	......	......	......	......
M.	......	......	......	......	......	......	......	......	......	......	......	......	......
Bond.........F..	380	......	......	68	93	98	57	34	19	8	2	1	......
M.	380	......	48	83	121	67	45	16	......	......	......	......	......
Boone.......F..	183	......	.....	33	58	35	29	15	6	1	2	......	4
M.	183	......	21	56	54	25	16	4	2	......	......	......	5
Brown.......F..	177	......	.....	33	54	37	20	18	10	5	......	......	......
M.	177	......	32	50	53	22	15	5	......	......	......	......	......
Bureau.......F..	446	......	......	42	134	111	72	45	16	12	8	1	5
M.	446	......	62	137	119	64	29	18	8	9	......	......	.....
Calhoun......F..	104	......	......	17	26	19	13	6	8	3	2	......	10
M.	104	......	13	27	22	15	12	5	......	......	.....	......	10
Carroll.......F..	296	......	......	54	92	45	46	28	23	8	......	......	......
M.	296	......	30	96	72	31	31	18	18	......	......	......	......
Cass.........F..	243	......	......	40	50	40	43	27	8	4	3	......	28
M.	243	......	24	74	38	40	31	6	1	......	......	......	29
Champaign..F..	549	......	......	71	131	112	81	51	38	11	7	......	47
M.	549	......	58	145	130	81	62	20	4	......	......	......	49
Christian.....F..	534	......	......	75	114	114	92	59	26	11	2	......	41
M.	534	......	58	127	132	89	61	21	......	......	......	......	46
Clark.........F..	344	......	......	12	37	111	72	52	27	16	6	......	11
M.	344	......	25	53	75	91	53	30	14	......	......	......	3
Clay.........F..	279	......	......	34	64	64	42	24	18	5	3	.....	25
M.	279	......	38	70	61	32	24	14	2	......	......	.....	38
Clinton..... F..	490	......	2	27	121	113	95	71	32	7	5	......	17
M.	490	......	23	130	134	97	56	29	......	......	......	......	21
Coles.........F..	576	......	.....	105	181	114	82	39	21	7	4	......	23
M.	576	......	73	171	154	88	44	15	2	......	......	......	29
Cook.........F..	22,779	......	58	2,741	6,017	4,222	3,075	1,569	641	152	95	......	4,209
M.	22,779	......	1,514	5,960	5,713	3,179	2,024	595	51	......	......	......	3,743

Table IV.—Continued.

The State and Counties.	All ages ...	Under 15...	16–20......	21–25......	26–30......	31–35......	36–40......	41–45......	46–50......	51–55......	56–60......	Over 60....	Not given ..
Crawford.... F..	436	......	......	103	105	84	59	40	24	8	3	......	10
M.	436	......	78	110	98	67	42	23	13	......	......	......	5
Cumberland.. F..	275	......	......	54	62	59	42	22	15	8	4	2	7
M.	275	......	43	84	55	37	29	17	10	......	......	......	......
DeKalb....... F..	207	......	......	20	59	36	45	16	8	3	5	......	15
M.	207	.....	21	47	49	35	18	7	4	......	.....	......	26
DeWitt ...... F..	277	......	.....	47	56	60	57	34	15	6	2	......	......
M.	277	......	37	87	69	36	30	16	2	......	......	......	......
Douglas...... F..	241	......	......	46	69	46	35	20	11	2	1	......	11
M.	241	......	35	71	58	31	29	11	......	......	......	......	6
DuPage...... F..	289	.....	......	45	72	68	42	30	12	7	......	......	13
M.	289	......	25	79	84	44	34	8	2	1	......	......	12
Edgar .... F..	383	......	......	69	95	73	63	34	16	4	3	......	26
M.	383	.....	55	111	79	62	40	15	......	......	......	......	21
Edwards..... F..	242	......	......	41	66	37	42	28	12	4	3	2	7
M.	242	......	22	77	56	38	36	8	1	......	......	......	4
Effingham.... F..	250	......	......	43	58	58	47	24	9	6	5	......	......
M.	250	......	30	71	62	48	29	9	1	......	......	......	......
Fayette ..... F..	249	......	......	50	66	49	34	20	12	5	......	.....	13
M.	249	......	33	70	60	44	17	6	......	......	......	......	19
Ford......... F..	145	......	......	21	38	34	26	13	2	2	3	4	2
M.	145	......	12	37	34	27	18	3	......	......	......	......	14
Franklin..... F..	265	......	......	54	53	58	37	14	16	8	1	......	24
M.	265	......	34	51	51	51	25	15	1	......	......	......	37
Fulton....... F..	564	......	......	81	134	112	95	37	27	15	7	......	56
M.	564	......	58	138	168	89	65	19	7	1	......	......	27
Gallatin ..... F..	241	......	......	40	56	48	39	27	6	2	2	......	21
M.	241	......	43	59	62	39	17	8	1	......	......	.....	12
Greene....... F..	215	......	......	52	31	42	43	14	14	4	3	......	12
M.	215	......	30	69	37	34	23	8	2	......	.....	......	12
Grundy ...... F..	154	......	......	18	40	36	26	10	12	4	.....	2	6
M.	154	......	16	40	33	25	22	5	5	......	......	......	8
Hamilton .... F..	325	......	......	63	71	73	58	25	18	8	3	......	6
M.	325	......	54	71	75	55	43	15	1	......	......	......	11
Hancock..... F..	485	......	......	78	121	97	95	39	19	7	1	......	28
M.	485	......	56	136	122	78	48	22	......	......	......	......	23
Hardin....... F..	153	......	......	24	32	14	15	5	3	1	1	......	58
M.	152	......	19	24	29	9	8	2	......	......	......	......	62
Henderson... F..	155	......	......	27	41	29	25	8	11	2	2	......	10
M.	155	......	18	41	46	24	9	9	......	......	.....	......	8
Henry........ F..	504	......	......	73	148	108	64	44	30	7	7	......	23
M.	504	......	44	151	127	81	45	31	3	......	......	......	22
Iroquois ..... F..	435	......	......	64	122	79	80	36	15	10	5	......	24
M.	435	......	40	123	123	62	50	11	1	......	......	......	25
Jackson...... F..	245	......	......	43	61	54	35	19	7	5	2	......	19
M.	245	......	32	72	63	33	27	3	1	......	......	......	14
Jasper .... F..	336	......	......	65	86	74	42	26	10	7	3	3	20
M.	336	......	51	97	66	45	35	10	1	1	......	......	30

Table IV.—Continued.

The State and Counties.	All ages...	Under 15...	16–20......	21–25	26–30......	31–35......	36–40......	41–45......	46–50......	51–55......	56–60......	Over 60......	Not given...
Jefferson .... F..	297	......	......	43	66	75	40	32	13	8	8	......	12
M.	297	......	47	97	58	36	24	21	1	......	......	......	13
Jersey .... F..	59	......	......	11	8	10	7	5	5	4	3	......	6
M.	59	......	5	16	13	10	6	3	1	1	......	......	4
JoDaviess ... F..	256	......	......	40	50	41	34	37	22	19	9	4	......
M.	256	......	33	63	50	35	35	21	13	6	......	......	......
Johnson ..... F..	319	......	......	85	78	57	50	31	12	4	......	2	......
M.	319	......	58	80	79	40	30	22	10	......	......	......	......
Kane......... F..	862	......	......	117	220	185	144	75	45	11	35	......	30
M.	862	......	149	204	228	134	79	21	2	20	10	8	7
Kankakee.... F..	310	......	......	40	81	57	50	40	23	12	5	......	2
M.	310	......	34	87	71	59	36	15	6	2	......	......	......
Kendall...... F..	179	......	......	30	56	38	19	12	11	2	......	......	11
M.	179	......	17	54	50	26	10	8	1	......	......	......	13
Knox .... F..	328	......	......	51	94	72	44	26	12	7	3	......	19
M.	328	......	43	89	78	47	33	15	1	......	.....	......	22
Lake......... F..	166	......	......	20	32	43	32	28	6	2	3	......	......
M.	166	......	14	50	45	35	17	4	1	......	......	......	......
LaSalle...... F..	1,228	......	......	174	315	284	208	122	47	18	10	5	45
M.	1,228	......	109	319	339	239	125	47	2	......	.....	......	48
Lawrence.... F..	322	......	......	42	65	66	55	33	26	18	15	2	......
M.	322	......	28	78	66	49	40	35	21	5	......	......	......
Lee .... F..	589	......	......	47	151	145	81	70	68	21	6	......	......
M.	589	......	80	190	190	81	38	9	1	......	......	......	......
Livingston... F..	294	......	......	37	79	58	40	27	16	10	1	......	26
M.	294	......	18	70	76	47	27	11	4	......	......	......	41
Logan........ F..	371	......	......	51	118	56	67	39	22	2	2	4	10
M.	371	......	48	83	102	55	34	10	......	......	......	......	39
Macon .... F..	578	......	......	91	188	105	103	31	23	7	9	......	21
M.	578	......	73	193	140	81	55	13	5	......	......	......	18
Macoupin.... F..	480	......	......	68	131	112	75	54	14	7	5	......	14
M.	480	......	48	133	138	81	52	13	6	......	......	......	9
Madison ..... F..	569	......	......	62	165	143	91	56	35	14	3	......	......
M.	569	......	40	148	174	95	69	28	2	......	......	......	13
Marion ...... F..	480	......	......	73	125	85	78	44	27	12	9	......	27
M.	480	......	49	138	117	76	57	15	4	......	......	.....	24
Marshall..... F..	253	......	......	45	61	53	48	23	12	4	1	......	6
M.	253	......	21	70	69	48	26	11	1	......	......	......	7
Mason .... F..	193	......	......	26	60	39	25	11	8	4	5	......	15
M.	193	......	31	51	49	27	16	4	1	......	......	......	14
Massac....... F..	68	......	......	5	18	13	13	7	6	1	......	......	5
M.	68	......	3	14	24	8	9	3	......	......	......	......	7
McDonough.. F..	350	......	......	65	101	61	49	27	18	7	2	......	20
M.	350	......	53	94	92	46	34	16	2	......	......	......	13
McHenry .... F..	225	......	.....	23	67	40	33	15	17	3	......	1	26
M.	225	......	18	44	68	25	24	11	......	......	......	......	35
McLean..... F..	1,096	......	......	135	303	212	157	98	48	20	19	......	104
M.	1,096	......	86	314	265	153	105	55	2	......	......	......	116

Table IV.—Continued.

The State and Counties.	All ages.	Under 15.	16–20.	21–25.	26–30.	31–35.	36–40.	41–45.	46–50.	51–55.	56–60.	Over 60.	Not given.
Menard……F..	140	……	……	26	43	24	15	13	6	1	2	……	10
M.	140	……	19	48	28	19	11	4	……	……	……	……	11
Mercer……F..	350	……	……	43	115	64	51	35	9	4	7	……	22
M.	350	……	33	89	110	47	41	12	1	……	……	……	17
Monroe……F..	428	……	……	51	126	84	73	51	15	8	4	……	19
M.	428	……	34	130	138	55	38	15	1	……	……	……	17
Montgomery.F..	515	……	……	61	130	112	101	52	26	19	……	……	14
M.	515	……	56	125	155	83	62	14	4	……	……	……	16
Morgan……F..	428	……	……	53	108	82	58	37	25	5	6	……	54
M.	423	……	40	97	111	77	41	12	4	……	……	……	46
Moultrie……F..	317	……	3	54	79	64	51	35	8	4	4	……	15
M.	317	……	42	97	69	48	35	13	……	……	……	……	13
Ogle……F..	254	……	……	39	70	53	41	19	7	4	……	……	21
M.	254	……	24	76	63	39	27	4	3	……	……	……	18
Peoria……F..	817	……	……	93	236	176	130	96	51	21	9	……	5
M.	817	……	38	250	261	132	92	34	3	2	……	……	5
Perry……F..	121	……	……	15	28	25	18	12	9	3	2	……	9
M.	121	……	15	22	36	17	14	6	1	……	……	……	10
Piatt……F..	281	……	……	32	79	42	36	31	7	5	1	……	48
M.	281	……	44	70	69	37	23	12	……	……	……	……	26
Pike……F..	354	……	……	51	97	70	46	27	16	4	3	……	40
M.	354	……	40	98	94	53	25	7	……	……	……	……	37
Pope……F..	207	……	……	32	50	43	29	15	9	3	2	3	21
M.	207	……	26	43	52	40	17	7	1	……	……	……	22
Pulaski……F..	46	……	……	7	10	8	12	2	2	5	……	……	……
M.	46	……	1	15	12	10	6	2	……	……	……	……	……
Putnam……F..	60	……	……	6	16	15	8	8	3	2	……	……	2
M.	60	……	10	11	16	10	6	4	……	…	……	……	3
Randolph……F.	399	……	……	46	99	69	60	24	22	2	7	……	70
M.	399	……	31	94	91	63	35	10	……	……	……	……	75
Richland……F..	253	……	……	47	67	41	35	21	15	7	6	1	13
M.	253	……	34	53	73	44	27	10	2	……	……	……	10
Rock Island.F..	737	……	……	101	209	168	121	72	32	11	7	16	……
M.	737	……	61	216	195	127	83	37	3	……	……	……	15
Saline……F..	182	……	……	31	54	38	28	11	5	4	2	……	9
M.	182	……	35	38	51	19	22	4	2	……	……	……	11
Sangamon…F..	570	……	……	68	147	107	99	56	24	4	3	……	62
M.	570	……	62	141	136	96	62	14	1	……	……	……	58
Schuyler……F..	202	……	……	40	56	40	31	12	8	3	1	……	11
M.	202	……	32	59	57	26	20	3	2	……	……	……	3
Scott……F..	115	……	……	17	38	25	11	7	8	1	……	……	8
M.	115	……	16	37	23	14	13	2	1	……	……	……	9
Shelby……F..	344	……	1	53	84	63	58	34	20	3	3	……	24
M.	343	……	31	80	83	57	36	19	1	……	……	……	36
Stark……F..	51	……	……	12	13	8	8	6	2	……	……	……	2
M.	51	……	5	19	14	6	4	……	……	……	……	……	3
St. Clair……F..	1,226	……	……	155	341	264	192	138	60	24	27	2	23
M.	1,226	……	84	371	347	194	151	51	16	7	……	……	5

Table IV.—Continued.

The State and Counties.	All ages....	Under 15....	16–20......	21–25......	26–30......	31–35......	36–40......	41–45......	46–50......	51–55......	56–60......	Over 60....	Not given..
Stephenson..F..	495	......	......	64	144	107	68	34	20	7		......	47
M.	495	......	32	139	135	61	51	23	4	......	......	......	50
Tazewell.....F..	458	......	......	61	132	93	77	31	18	8	4	1	33
M.	458	......	51	126	120	74	42	19	......	......	......	......	26
Union ....F..	257	......	......	43	74	47	38	15	14	7	3	......	16
M.	257	......	30	85	52	45	22	6	......	......	......	......	17
Vermilion....F..	547	.....	......	104	150	115	100	51	17	5	3	......	29
M.	574	......	94	179	131	73	51	18	......	......	......	......	28
Wabash......F..	285	......	4	40	69	45	55	33	9	5	5	......	20
M.	285	......	18	70	79	47	35	12	......	......	......	......	24
Warren......F..	419	......	6	60	100	83	78	47	18	10	......	1	16
M.	419	......	38	131	85	77	51	21	1	......	......	......	15
Washington. F..	352	......	2	37	78	69	69	51	16	7	4	......	19
M.	352	1	30	79	83	74	51	12	3	......	......	......	19
Wayne.......F..	54	......	......	6	20	7	8	9	2	......	1	......	1
M.	54	......	9	10	16	6	6	3	2	1	......	......	1
White........F .	356	......	......	58	88	77	50	32	13	7	3	......	28
M.	356	......	43	97	89	43	35	19	7	......	......	......	23
Whiteside... F..	560	......	......	94	159	104	96	49	31	14	4	......	9
M.	560	......	67	154	157	87	59	22	6	......	......	......	8
Will.........F..	422	......	......	53	112	82	69	21	20	2	......	......	63
M.	422	......	27	107	95	75	40	10	......	......	......	......	68
Williamson..F..	476	......	......	83	134	92	63	45	19	8	5	......	27
M.	476	......	56	121	110	76	58	20	4	......	......	......	31
Winnebago...F..	658	......	......	100	224	148	96	53	21	13	3	......	......
M.	658	......	53	176	202	120	68	38	1	......	......	......	......
Woodford....F..	273	......	......	35	70	68	48	13	15	11	2	......	11
M.	273	......	21	76	70	52	25	18	2	......	......	......	9

Table V.—*Births reported for the year 1886:* Number of Child of Mother.

The State and Counties.	All numbers	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Eleven and more....	Not given...
Illinois	59,197	13,617	11,427	8,591	6,348	4,839	3,645	2,654	1,932	1,318	888	1,152	2,786
Adams	839	162	151	131	86	70	68	39	35	25	30	11	31
Alexander.......	......	......	......	......	......	......	......	......	......	......	......	......	......
Bond	380	76	73	69	24	42	28	27	15	9	1	16	......
Boone...........	183	52	42	35	25	10	8	2	5	2	1	1	......
Brown	177	60	34	19	19	15	9	8	8	2	2	1	......
Bureau..........	446	128	93	75	39	45	25	11	12	7	4	2	5
Calhoun.........	104	28	16	14	13	7	10	8	......	3	2	3	......
Carroll..........	296	84	76	38	29	19	15	7	8	3	7	10	......
Cass	243	54	53	34	28	15	15	7	9	7	2	9	10
Champaign	549	124	109	89	62	45	30	26	19	14	9	12	10
Christian	534	99	87	74	71	55	45	32	18	17	7	3	26
Clark	344	93	58	56	38	27	17	16	15	10	6	8	......
Clay.............	279	64	51	35	35	24	24	17	7	3	7	8	4
Clinton	490	83	74	77	51	37	51	33	28	16	11	11	18
Coles............	576	130	113	81	87	53	32	30	24	8	8	1	9
Cook............	22,779	5,168	4,449	3,132	2,256	1,658	1,237	943	701	471	285	364	2,115
Crawford........	436	88	73	71	54	47	38	23	13	20	5	4	......
Cumberland	275	59	66	41	36	25	17	11	8	5	3	3	1
DeKalb	207	58	37	27	21	21	9	6	3	8	1	16	......
DeWitt	277	70	60	50	31	18	21	15	4	2	4	2	......
Douglas	241	51	52	42	31	20	11	16	5	6	3	3	1
DuPage	289	70	56	52	31	23	17	16	5	12	1	2	4
Edgar...........	383	106	79	50	30	45	22	15	10	8	7	11	......
Edwards.........	242	53	34	36	30	20	21	20	10	8	6	2	2
Effingham.......	250	54	45	42	28	23	16	21	9	6	3	3	......
Fayette..........	249	49	63	37	24	18	16	18	9	1	......	7	7
Ford	145	42	32	18	10	7	12	8	6	2	2	6	......
Franklin........	265	46	44	28	31	28	26	16	15	6	10	3	12
Fulton	564	146	116	83	53	50	25	30	17	16	7	6	15
Gallatin.........	241	54	43	27	33	27	13	11	8	4	6	15	......
Greene..........	215	52	36	26	30	18	16	14	7	1	6	5	4
Grundy	154	30	40	20	16	8	6	12	8	5	4	3	2
Hamilton	325	60	56	44	40	27	20	23	15	9	5	6	20
Hancock	485	124	91	80	53	46	37	21	10	6	8	9	......
Hardin..........	153	29	21	24	22	16	9	6	12	5	2	4	3
Henderson......	155	37	31	28	19	12	7	6	5	2	5	......	3
Henry...........	504	133	94	85	40	40	37	23	14	19	4	18	......
Iroquois	435	98	83	62	48	44	31	18	14	10	8	5	14
Jackson.........	245	39	59	31	33	23	22	9	9	6	5	......	9
Jasper......	336	58	62	61	39	37	24	17	12	7	8	11	......
Jefferson	297	70	46	34	22	22	26	12	9	8	8	17	23
Jersey...........	59	17	7	10	5	7	2	1	2	2	......	4	2
Jo Daviess	256	53	44	36	37	26	24	12	11	6	3	4	......
Johnson	319	63	51	45	25	33	22	21	16	12	6	10	12
Kane............	862	258	186	140	82	46	39	29	31	18	11	10	15

Table V.—Continued.

The State and Counties.	All numbers	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Eleven and more.....	Not given...
Kankakee.......	310	65	72	42	32	27	20	8	16	9	14	5	......
Kendall.........	179	45	42	29	22	13	7	7	......	4	1	2	7
Knox...........	328	102	66	47	33	22	18	15	7	9	7	......	2
Lake...........	166	45	30	28	28	10	9	6	5	2	2	......	......
LaSalle.........	1,228	319	226	177	139	113	73	58	51	21	9	42	......
Lawrence.......	322	45	60	50	57	34	27	15	20	3	6	5	......
Lee.............	589	101	91	90	81	65	50	40	28	22	11	10	......
Livingston......	294	69	53	38	35	28	24	18	3	8	2	16	......
Logan	371	77	78	70	32	33	22	14	20	5	3	17	......
Macon..........	578	159	111	98	63	37	37	23	14	8	9	11	8
Macoupin.......	480	95	104	81	49	39	39	18	20	8	12	2	13
Madison..........	569	111	100	79	67	59	45	33	22	20	15	18	......
Marion..........	480	118	81	58	60	48	30	23	16	12	5	9	20
Marshall........	253	60	45	38	31	19	17	13	11	5	2	6	6
Mason	193	46	33	23	27	13	16	8	3	3	4	3	14
Massac..........	68	22	14	7	7	4	4	2	......	2	1	......	5
McDonough	350	88	92	45	40	32	11	13	9	4	10	6	......
McHenry........	225	49	41	26	28	20	10	7	3	2	2	8	29
McLean.........	1,096	260	225	160	125	81	57	41	35	22	14	17	59
Menard	140	38	16	22	21	13	6	8	2	2	3	2	7
Mercer	350	90	73	49	31	31	20	18	10	11	6	6	5
Monroe	428	72	87	60	56	35	38	20	19	12	12	10	7
Montgomery	515	113	91	82	56	53	36	26	20	11	10	7	10
Morgan	428	94	75	81	45	43	34	19	10	6	8	5	8
Moultrie	317	80	68	43	38	22	27	15	12	7	5	5	......
Ogle.............	254	76	55	34	29	17	14	7	4	5	3	5	5
Peoria...........	817	218	171	116	82	70	49	36	28	17	14	16	......
Perry	121	24	21	18	19	7	7	6	7	1	5	4	2
Piatt............	281	71	70	42	25	28	20	8	4	4	2	7	......
Pike	354	81	66	50	51	30	26	15	15	......	5	1	14
Pope	207	49	43	23	17	25	15	7	4	4	6	3	11
Pulaski	46	9	9	8	4	4	4	3	2	......	3	......	......
Putnam..........	60	15	11	10	8	6	3	1	5	......	1	......	......
Randolph	399	85	53	62	41	39	31	20	11	11	5	14	27
Richland........	253	53	51	47	27	25	17	10	11	6	4	2	......
Rock Island.....	837	169	153	113	106	64	40	30	22	14	4	22	......
Saline	182	44	26	27	22	23	14	8	6	4	......	3	5
Sangamon	570	140	115	83	58	41	41	19	23	12	13	9	16
Schuyler	202	54	41	25	23	18	15	8	7	1	7	......	3
Scott............	115	37	26	17	12	6	6	5	3	3	......	......	......
Shelby	343	77	60	49	40	28	21	19	12	11	5	6	15
Stark	51	15	15	9	3	2	5	......	1	1	......	......	......
St. Clair.........	1,226	254	197	175	136	127	94	70	37	52	32	52	......
Stephenson	495	130	101	82	41	31	22	23	10	13	5	37	......
Tazewell........	458	109	87	76	58	32	23	25	9	10	6	11	12
Union...........	257	58	43	38	46	22	7	12	10	5	6	6	4
Vermilion	574	134	134	88	65	45	34	23	15	14	4	10	8
Wabash	285	42	60	45	38	29	23	12	11	12	3	5	5
Warren	419	110	72	67	42	41	28	23	13	6	5	8	4
Washington	352	43	62	45	41	44	26	19	16	14	13	19	10
Wayne	54	12	8	9	4	5	6	5	1	2	1	1	......
White...........	356	73	58	63	44	39	27	21	6	8	5	12	......
Whiteside.......	560	153	95	79	66	44	34	28	10	9	8	7	27
Will.............	422	102	92	65	38	28	26	13	14	9	7	5	23
Williamson	476	95	72	71	55	46	31	30	29	17	10	11	9
Winnebago......	658	198	151	102	70	54	34	14	12	13	2	8	......
Woodford.......	273	52	49	41	22	26	25	10	17	8	8	6	9

VITAL STATISTICS OF ILLINOIS. § 3—DEATHS.

TABLE I.—*Deaths from Specified Causes (classified) reported in Illinois during the year 1886*: AT GIVEN AGES.

CAUSES OF DEATH.	AGES.													
	Under 1 year..	Between 1 and 5 years.	5-10 years	10-15 years....	15-20 years....	20-30 years....	30-40 years...	40-50 years....	50-60 years....	60-70 years....	70-80 years....	80-90 years....	Over 90 years.	Totals ....
Total deaths from all causes	7,398	4,700	1,451	792	1,251	2,913	2,483	2,002	2,033	2,012	1,639	678	82	29,434
I.—Specific Febrile or Zymotic Diseases	2,125	2,325	794	304	352	664	391	240	168	178	108	22	1	7,672
A.—MIASMATIC DISEASES	689	1,769	734	270	279	428	213	131	79	73	45	2	......	4,712
Small-pox	1	2	......	2	4	2	4	......	1	......	......	......	......	16
Chicken-pox	1	2	1	......	......	......	......	......	......	......	......	......	......	4
Measles	46	113	12	2	2	......	......	2	......	3	1	......	......	181
Scarlet fever	35	257	98	22	10	10	6	5	......	......	......	......	......	443
Typhus fever	......	......	6	2	5	9	6	1	1	1	......	......	......	31
Influenza	6	4	3	1	1	......	......	2	1	2	1	......	......	21
Mumps	2	4	1	2	......	1	1	......	......	1	......	......	......	12
Diphtheria	116	837	418	97	36	20	10	7	1	2	3	......	......	1,547
Cerebro-spinal fever	322	341	99	31	25	51	31	27	12	16	3	......	......	958
Whooping-cough	124	116	9	2	1	1	......	......	1	......	......	......	......	254
Continued fever	5	14	14	14	23	35	13	24	11	10	10	......	......	173
Enteric fever	22	75	71	93	172	297	141	61	50	37	27	2	......	1,048
Other miasmatic diseases	9	4	2	2	......	2	1	2	1	1	......	......	......	24
B.—DIARRHETIC DISEASES	1,321	461	18	4	7	35	23	21	39	43	37	17	1	2,027
Cholera infantum	1,107	337	......	......	......	......	......	......	......	......	......	......	......	1,444
Cholera morbus	13	10	4	2	......	11	4	3	11	14	8	1	......	81
"Winter cholera"	2	1	......	1	......	2	2	......	......	......	......	......	......	8
Diarrhea	126	50	5	......	3	7	9	9	11	15	14	7	1	257
Dysentery	73	63	9	1	4	15	8	9	17	14	15	9	......	237

C.—MALARIAL DISEASES	41	59	25	19	22	39	26	28	25	37	18	2		342
Intermittent fever	7	10	2	1	2	2	4	3	4	4				39
Remittent fever	16	31	11	6	9	14	6	10	13	19	8	1		144
Congestive fever	14	14	9	9	6	15	10	11	6	10	7	1		112
Other malarial diseases	4	4	3	3	5	8	6	4	2	4	3			46
E.—ZOÖGENOUS DISEASES	6	4		1	4	2	4	2	1	1				25
Hydrophobia		1			1									2
Other zoögenous diseases	6	3		1	3	2	4	2	1	1				23
E.—VENEREAL DISEASES	19	2	1	2		8	8	1	2					43
Syphillis	19	2	1	1		8	8	1	2					42
Other venereal diseases				1										1
F.—SEPTIC DISEASES	49	30	16	8	40	152	117	57	22	24	8	1		524
Phagedena		1		1										2
Erysipelas	35	11	4	4	11	10	11	21	12	8	2	1		130
Pyemia	1	5	4	2	1	6	10	7	5	7	1			49
Septicemia	13	13	8	1	9	45	31	16	5	9	5			155
Puerperal fever					19	91	65	13						188
II.—Parasitic Diseases	16	6	1			1								24
Thrush	15	3												18
Hydatids		1												1
Worms		1				1								2
Trichiniasis		1	1											2
Other parasitic diseases	1													1
III.—Dietic Diseases	12	1				14	29	25	15	9	1	1		107
Starvation	12									1				13
Scurvy		1				1						1		3
Alcoholism						9	21	19	11	8				68
Delirium tremens						4	8	6	4		1			23
IV.—Constitutional Diseases	360	192	64	94	320	946	718	523	468	351	173	38		4,247
Rheumatic fever	1	1	4	1	5	10	5	8	4	2	2	3		46
Rheumatic heart		2	1	3	1	4	9	9	10	4	2	2		47
Rheumatism	1		2	3	8	7	12	12	14	14	9	4		86
Gout								1						1

Table I.—Continued.

CAUSES OF DEATH.	AGES.													
	Under 1 year..	Between 1 and 5 years.	5-10 years	10-15 years....	15-20 years....	20-30 years....	30-40 years....	40-50 years....	50-60 years....	60-70 years....	70-80 years....	80-90 years....	Over 90 years.	Totals ....
Rickets	9	1	......	......	......	......	......	......	......	......	......	......	......	10
Cancer	8	5	5	2	5	23	67	115	152	148	68	10	......	608
Tabes mesenterica	167	45	6	5	4	7	10	6	12	15	10	5	......	292
Tubercular meningitis	83	46	7	7	3	7	7	3	3	1	1	1	......	169
Phthisis	53	70	32	57	276	846	578	346	242	142	60	12	......	2,714
Scrofula	15	15	6	6	7	9	8	1	5	......	1	......	......	73
Purpura	1	3	......	......	7	7	4	3	2	1	......	1	......	29
Anemia	21	1	1	2	2	10	6	8	12	11	10	......	......	84
Diabetes mellitus	1	2	......	6	2	11	9	10	9	11	9	......	......	70
Other constitutional diseases	......	1	......	2	......	5	3	1	3	2	1	......	......	18
V.—Developmental Diseases	556	2	......	......	......	......	......	......	......	41	253	251	55	1,158
Premature birth	444	......	......	......	......	......	......	......	......	......	......	......	......	444
Atelectasis	20	......	......	......	......	......	......	......	......	......	......	......	......	20
Cyanosis	39	2	......	......	......	......	......	......	......	......	......	......	......	41
Spina bifida	21	......	......	......	......	......	......	......	......	......	......	......	......	21
Other congenital defects	27	......	......	......	......	......	......	......	......	......	......	......	......	27
Umbilical hemorrhage	5	......	......	......	......	......	......	......	......	......	......	......	......	5
Old age	......	......	......	......	......	......	......	......	......	41	253	251	55	600
VI.—Local Diseases	4,307	2,187	536	353	663	1,790	1,610	1,387	1,499	1,553	1,285	569	71	17,810
A.—NERVOUS SYSTEM	1,399	390	78	57	50	119	133	189	225	282	225	82	6	3,235
Inflammation of brain	85	59	13	14	6	11	16	14	11	14	5	3	......	251
Apoplexy	78	49	15	10	9	30	35	64	89	102	76	22	3	582
Softening of brain	3	3	1	3	......	3	3	9	19	17	19	6	......	86
Hydrocephalus, not acute	8	4	......	......	......	......	2	......	2	1	......	......	......	17
Hemiplegia	1	2	2	......	......	4	4	8	11	10	13	2	......	57
Paralysis agitans	......	......	1	1	2	2	4	1	5	8	2	3	......	29
General paralysis of insane	......	1	......	......	1	4	9	15	9	10	5	3	......	57
Paraplegia	......	......	......	......	......	2	2	2	1	4	......	3	......	14

Chorea	......	2	1	1	1	1	......	......	......	......	......	......	......	6
Epilepsy	4	......	......	6	9	17	17	9	11	7	......	1	1	82
Convulsions	1,089	253	33	7	3	16	10	6	6	9	5	1	......	1,438
Trismus nascentium	78	......	......	......	......	......	......	......	......	......	......	......	......	78
Tetanus	34	2	3	6	7	6	6	3	3	1	......	......	......	71
Diseases of spinal cord	5	4	1	3	4	6	3	9	4	3	2	......	......	44
Other diseases, nervous system	14	11	8	6	8	15	24	49	54	96	98	38	2	423
B.—ORGANS OF SPECIAL SENSE	1	......	......	1	......	......	......	......	......	......	......	......	......	2
Epistaxis	1	......	......	......	......	......	......	......	......	......	......	......	......	1
Other diseases, nose, ear and eye	......	......	......	1	......	......	......	......	......	......	......	......	......	1
C.—CIRCULATORY SYSTEM	34	27	31	40	47	116	130	164	181	235	150	64	1	1,220
Endocarditie	1	......	4	3	1	7	7	5	3	4	4	1	......	40
Pericarditis	......	1	3	3	2	10	5	4	8	4	6	1	......	47
Hypertrophy of heart	......	2	......	3	3	5	6	4	2	11	11	4	......	51
Angina pectoris	......	1	2	1	2	2	2	2	7	5	9	2	......	35
Valve-disease of heart	6	4	2	12	15	34	36	60	51	63	34	15	......	332
Syncope	......	......	......	1	......	1	1	3	3	......	1	......	......	10
Aneurism	......	......	......	......	......	......	2	3	4	2	4	2	......	17
Senile gangrene	......	......	......	......	......	......	......	......	3	3	11	16	......	33
Embolism	8	4	2	2	4	11	19	14	14	28	16	7	......	129
Phlebitis	......	......	......	......	......	......	......	......	2	1	1	......	......	4
Varicose veins	......	......	......	......	......	1	......	1	......	1	1	1	......	5
Other diseases, circulatory system	19	15	18	15	20	45	52	68	84	113	52	15	1	517
D.—RESPIRATORY SYSTEM	1,048	1,207	253	88	122	249	239	229	295	313	249	86	6	4,384
Laryngitis	8	18	4	2	3	4	3	3	1	1	......	......	......	47
Croup	102	475	124	4	3	2	1	1	2	......	1	......	......	715
Other diseases, larynx and trachea	......	1	......	......	......	2	......	2	1	......	......	......	......	6
Emphysema	1	......	......	......	1	1	......	2	1	6	2	1	......	15
Asthma	6	2	1	2	3	3	3	9	17	20	6	2	1	75
Bronchitis	480	304	23	10	16	17	31	23	43	65	72	30	3	1,117
Pneumonia	408	381	82	41	69	166	157	154	193	190	141	45	2	2,029
Typhoid pneumonia	19	18	13	27	21	44	25	22	22	12	14	2	......	239
Pleurisy	3	3	1	2	2	3	10	3	2	5	5	......	......	39
Other diseases, respiratory system	21	5	5	......	4	7	9	10	13	14	8	6	......	102
E.—DIGESTIVE SYSTEM	840	317	79	52	74	195	174	157	167	190	119	22	1	2,387
Stomatitis	8	2	......	......	1	......	1	4	4	6	3	2	......	31
Dentition	31	35	......	......	......	......	......	......	......	......	......	......	......	66
Sore throat	5	9	3	3	2	3	......	1	1	3	......	......	......	30
Dyspepsia	14	2	......	......	......	1	......	2	2	7	2	......	......	30
Hematemesis	1	......	......	......	......	......	......	......	1	1	2	1	......	6

Table I.—Continued.

Causes of Death.	Ages.													
	Under 1 year	Between 1 and 5 years	5–10 years	10–15 years	15-20 years	20–30 years	30–40 years	40–50 years	50–60 years	60–70 years	70–80 years	80–90 years	Over 90 years	Totals
Melana	2	......	......	......	......	......	1	......	......	......	1	......	......	4
Disease of stomach	47	31	2	8	5	16	25	15	21	26	24	4	......	224
Enteritis	311	100	12	8	5	15	8	13	13	10	16	5	......	516
Ulceration of intestines	3	2	1	2	2	10	6	4	5	3	1	......	......	39
Ileus	2	......	......	......	1	2	2	......	3	3	......	......	......	13
Stricture and strangulation of intestines	1	......	3	......	2	4	3	1	1	2	2	....	......	22
Intussusception	7	5	3	2	1	1	4	1	5	2	2	......	......	33
Hernia	7	......	......	......	......	......	1	3	8	4	6	......	......	29
Fistula	2	......	......	......	......	......	......	......	1	......	1	......	......	4
Peritonitis	69	34	34	22	40	95	69	42	24	31	20	2	......	482
Ascites	......	......	1	......	1	3	1	2	5	5	2	......	......	20
Gallstones	......	......	......	......	......	1	2	......	......	1	2	......	......	6
Jaundice	24	1	2	......	1	6	1	2	9	10	4	2	......	62
Cirrhosis	......	1	1	1	......	1	7	24	16	16	6	......	......	73
Other diseases of liver	18	9	2	1	5	13	21	28	25	33	13	1	1	170
Other diseases, digestive system	288	86	15	5	8	24	22	15	20	27	12	5	......	527
F.—Lymphatic System	2	1	2	......	......	......	6	2	2	2	1	......	......	18
Disease of lymphatics	1	......	......	......	......	......	......	......	1	......	......	......	......	2
Disease of spleen	1	1	2	......	......	......	6	2	1	2	1	......	......	16
G.—Gland-like Organs of Uncertain Use	1	2	......	1	2	......	3	1	3	......	2	......	......	15
Bronchocele	1	1	......	1	1	......	2	......	3	......	1	......	......	10
Addison's disease	......	1	......	......	1	......	1	1	......	......	1	......	....	5
H.—Urinary System	26	37	24	15	21	60	86	68	119	109	100	25	2	692
Nephritis	11	20	17	7	9	16	25	18	24	14	11	4	......	176
Bright's disease	5	9	5	3	8	31	42	39	66	56	34	9	......	307
Uremia	5	4	1	2	4	8	10	4	10	12	16	1	......	77
Suppression of urine	2	......	......	......	......	......	......	......	2	3	4	......	......	11

Calculus	......	1	1	......	......	......	1	......	1	2	5	......	......	11
Hematuria	......	......	......	......	......	1	......	1	......	......	2	......	......	4
Diseases of bladder and prostate	......	......	......	2	......	1	1	......	4	3	5	1	2	19
Other diseases, urinary system	3	3	......	1	......	3	7	6	12	19	23	10	......	87
I.—REPRODUCTIVE ORGANS	2	2	......	4	24	78	85	24	14	5	2	......	......	240
a. Organs of Generation	2	2	......	3	10	26	34	13	10	5	2	......	......	107
Ovarian disease	......	......	......	......	1	4	3	2	4	2	......	......	......	16
Disease of uterus and vagina	......	......	......	......	5	12	22	6	2	1	......	......	......	48
Disorders of menstruation	......	......	......	3	3	5	2	2	2	......	......	......	......	17
Pelvic abscess	......	......	......	......	1	4	6	1	1	1	......	......	......	14
Perineal abscess	1	......	......	......	......	......	......	......	......	1	......	......	......	2
Disease of testes, penis etc	1	2	......	......	......	1	1	2	1	......	2	......	......	10
b. Parturition	......	......	......	1	14	52	51	11	4	......	......	......	......	133
Abortion	......	......	......	......	......	3	4	......	......	......	......	......	......	7
Miscarriage	......	......	......	......	1	7	4	1	......	......	......	......	......	13
Puerperal mania	......	......	......	......	......	3	6	1	......	......	......	......	......	10
Puerperal convulsions	......	......	......	1	9	16	4	1	......	......	......	......	......	31
Placenta prævia	......	......	......	......	......	4	3	1	......	......	......	......	......	8
Flooding	......	......	......	......	1	5	8	3	1	......	......	......	......	18
Phlegmasia dolens	......	......	......	......	......	2	1	......	......	......	......	......	......	3
Other complications of childbirth	......	......	......	......	3	12	21	4	3	......	......	......	......	43
K.—LOCOMOTOR SYSTEM	1	2	3	1	2	8	6	3	5	5	5	......	......	41
Caries and necrosis	......	......	2	1	......	2	2	1	1	1	......	......	......	10
Arthritis	......	......	......	......	1	1	1	2	......	1	1	......	......	7
Ostitis	......	......	......	......	1	......	......	......	1	2	2	......	......	6
Other diseases, locomotor system	1	2	1	......	......	5	3	......	3	1	2	......	......	18
L.—INTEGUMENTARY SYSTEM	9	1	1	......	1	4	1	2	5	11	5	......	......	40
Carbuncle	1	......	......	......	......	2	......	......	2	7	2	......	......	14
Phlegmon	......	......	......	......	......	......	......	......	1	......	1	......	......	2
Lupus	......	......	......	......	......	1	......	......	1	......	1	......	......	3
Ulcer	1	1	......	......	1	1	1	......	1	3	1	......	......	10
Eczema	4	......	1	......	......	......	......	......	......	......	......	......	......	5
Pemphigus	......	......	......	......	......	......	......	1	......	......	......	......	......	1
Other diseases, integumentary system	3	......	......	......	......	......	......	1	......	1	......	......	......	5

Table I.—Continued.

Causes of Death.	Ages.													
	Under 1 year..	Between 1 and 5 years.	5-10 years	10-15 years....	15-20 years....	20-30 years....	30-40 years....	40-50 years....	50-60 years....	60-70 years....	70-80 years....	80-90 years....	Over 90 years.	Totals ....
VII.—Violence	43	83	85	101	179	328	305	230	187	100	60	16	2	1,719
Railroad accident	2	5	18	21	29	90	60	47	31	24	17	1	......	345
Other accident	37	76	63	78	111	168	171	114	96	51	28	14	1	1,008
Homicide	4	2	4	......	4	13	10	18	8	1	3	......	1	68
Suicide	......	......	......	2	35	56	64	51	52	24	12	1	8	297
Execution	......	......	......	......	......	1	......	......	......	......	......	......	......	1
VIII.—Otherwise Unclassified	923	105	36	34	57	131	177	145	179	181	186	71	......	2,233
Dropsy	4	10	6	4	5	20	15	22	37	30	28	9	1	191
Debility	36	4	1	1	1	1	4	5	4	8	25	12	......	102
Atrophy from inanition	444	17	3	......	2	3	2	2	9	4	4	1	......	491
Mortification	1	2	2	1	1	3	5	6	4	9	9	5	1	49
Tumor	1	1	1	1	1	6	8	8	10	7	5	1	......	50
Abscess	12	8	3	2	11	21	12	12	17	13	6	1	1	119
Hemorrhage	8	......	1	2	......	3	17	10	9	2	4	......	......	56
Sun-stroke	1	......	......	......	1	3	13	4	4	6	6	2	......	40
Sudden - not stated	3	3	1	1	1	......	1	......	......	2	2	1	......	15
Ill-defined	271	40	11	12	24	50	70	44	66	79	81	34	4	786
Unknown	142	20	7	10	10	21	30	32	19	21	16	5	1	334

TABLE II.—*Deaths from Specified Causes (classified) reported in Illinois during the year 1886:* SEX, COLOR, NATIVITY, SOCIAL CONDITION AND LOCALITY.

CAUSES OF DEATH.	SEX.		COLOR.		NATIVITY.			SOCIAL CONDITION.				LOCALITY.			Totals........
	Male........	Female........	White.........	Colored.......	Illinois.......	United States.	Foreign.......	Single	Married.......	Widower	Widow........	Cities or towns over 5,000 pop.	Towns under 5,000, over 500 population...	Towns or villages under 500 pop. or in country......	
Total deaths from all causes......................	16,130	13,304	28,897	537	12,527	10,228	6,679	18,462	8,306	1,070	1.596	18,298	4,887	6,249	29,434
I.—Specific Febrile or Zymotic Diseases..............	3,931	3,741	7,579	93	3,973	2,783	916	6,329	1,133	68	142	4,765	1,266	1,641	7,672
A.—MIASMATIC DISEASES..........................	2,462	2,250	4,655	57	2,277	1,923	512	4,062	558	31	61	3,023	752	937	4,712
Small-pox	9	7	16	......	9	3	4	13	3	......	......	3	7	6	16
Chicken-pox...	3	1	4	......	2	2	......	4	......	......	......	3	....	1	4
Measles..	96	85	179	2	85	87	9	175	5	......	1	141	24	16	181
Scarlet fever..	225	218	440	3	240	188	15	433	10	......	......	264	94	85	443
Typhus fever..	16	15	31	......	4	12	15	23	6	......	2	31	....	....	31
Influenza..	15	6	20	1	14	4	3	16	3	1	1	7	5	9	21
Mumps	3	9	12	......	6	5	1	9	2	......	1	8	1	3	12
Diphtheria..	797	750	1,537	10	849	659	39	1,527	14	1	5	1,091	226	230	1,547
Cerebro-spinal fever..................................	521	437	949	10	534	346	78	860	85	6	7	648	111	199	958
Whooping-cough	111	143	247	7	176	74	4	251	3	......	......	142	52	60	254
Continued fever	89	84	168	5	72	75	26	98	65	5	5	53	50	70	173
Enteric fever	567	481	1,031	17	270	461	317	636	356	18	38	632	173	243	1,048
Other miasmatic diseases..........................	10	14	22	2	16	7	1	17	6	......	1	....	9	15	24
B.—DIARRHETIC DISEASES..........................	1,103	924	2,008	19	1,378	518	131	1,854	115	23	35	1,300	331	396	2,027
Cholera infantum	783	661	1,434	10	1,091	333	20	1,444	......	......	......	997	211	236	1,444
Cholera morbus...	50	31	78	3	17	27	37	40	32	5	4	44	17	20	81
"Winter cholera".......................................	7	1	8	......	6	2	......	6	2	......	......	3	2	3	8
Diarrhea..	145	112	253	4	145	80	32	198	44	5	10	168	37	52	257
Dysentery	118	119	235	2	119	76	42	166	37	13	21	88	64	85	237

Table II.—Continued.

CAUSES OF DEATH.	SEX.		COLOR.		NATIVITY.			SOCIAL CONDITION.				LOCALITY.			Totals............
	Male..........	Female........	White.........	Colored.......	Illinois........	United States.	Foreign.......	Single.........	Married.......	Widower......	Widow.,......	Cities or towns over 5,000 pop.	Towns under 5,000, over 500 population...	Towns or villages under 500 pop. or in country......	
C.—MALARIAL DISEASES..............................	175	166	332	9	138	132	71	196	113	5	27	91	77	173	341
Intermittent fever..................................	25	14	38	1	17	15	7	25	13	1	......	14	7	18	39
Remittent fever.....................................	65	79	139	5	54	56	34	86	43	1	14	49	31	64	144
Congestive fever....................................	59	53	110	2	48	41	23	59	41	3	9	13	28	71	112
Other malarial diseases............................	26	20	45	1	19	20	7	26	16	......	4	15	11	20	46
E.—ZOÖGENOUS DISEASES...........................	14	11	25	......	9	9	7	18	4	......	3	11	11	3	25
Hydrophobia	1	1	2	......	2	......	......	2	......	......	......	1	1	....	2
Other zoögenous diseases..........................	13	10	23	......	7	9	7	16	4	......	3	10	10	3	23
E.—VENEREAL DISEASES............................	22	21	37	6	24	12	7	33	6	2	2	36	2	5	43
Syphilis	21	21	37	5	23	12	7	32	6	2	2	35	2	5	42
Other venereal diseases............................	1	......	......	1	1	......	......	1	......	......	......	1	....	....	1
F.—SEPTIC DISEASES.................................	155	369	522	2	147	189	188	166	337	7	14	304	93	127	524
Phagedena..	1	1	2	......	2	......	......	2	......	......	......	....	1	1	2
Erysipelas..	68	62	129	1	54	35	41	71	49	1	9	75	26	29	130
Pyemia	31	18	49	......	14	19	16	22	25	2	......	25	10	14	49
Septicemia..	55	100	154	1	36	69	50	61	87	4	3	99	26	30	155
Puerperal fever......................................	......	188	188	......	41	66	81	10	176	......	2	105	30	53	188
II.—Parasitic Diseases..............................	9	15	24	......	22	2	......	24	......	......	......	15	4	5	24
Thrush	8	10	18	......	17	1	......	18	......	......	......	14	1	3	18
Hydatids..	......	1	1	......	1	......	......	1	......	......	......	....	1	....	1
Worms	......	2	2	......	1	1	......	2	......	......	......	....	2	....	2
Trichiniasis	1	1	2	......	2	......	......	2	......	......	......	1	....	1	2
Other parasitic diseases...........................	......	1	1	......	1	......	......	1	......	......	......	....	....	1	1

III.—Dietic Diseases	83	24	104	3	36	46	25	45	45	11	6	79	16	12	107
Starvation	8	5	12	1	10	3	......	12	......	......	1	5	3	5	13
Scurvy	2	1	3	......	1	......	2	1	1	1	......	2	1	....	3
Alcoholism	51	17	66	2	20	31	17	24	30	9	5	55	8	5	68
Delirium tremens	22	1	23	......	5	12	6	8	14	1	......	17	4	2	23
IV.—Constitutional Diseases	2,089	2,158	4,111	136	1,198	1,640	1,409	1,843	1,964	183	257	2,726	705	816	4,247
Rheumatic fever	23	23	44	2	12	20	14	17	23	2	4	23	8	15	46
Rheumatic heart	27	20	43	4	12	20	15	17	25	3	2	33	4	10	47
Rheumatism	43	43	85	1	8	42	36	17	49	9	11	43	19	24	86
Gout	......	1	1	......	1	......	......	......	......	......	1	....	....	1	1
Rickets	5	5	10	......	8	2	......	10	......	......	......	8	1	1	10
Cancer	259	349	602	6	65	245	298	103	395	43	67	395	106	107	608
Tabes mesenterica	145	147	288	4	182	67	43	240	35	6	11	207	43	42	292
Tubercular meningitis	88	81	165	4	113	43	13	151	14	2	2	108	33	28	169
Phthisis	1,341	1,373	2,605	109	712	1,097	905	1,141	1,329	100	144	1,747	444	523	2,714
Scrofula	43	30	69	4	31	29	13	62	10	1	......	42	17	14	73
Purpura	13	16	28	1	5	13	11	18	9	2	......	18	3	8	29
Anemia	49	35	83	1	29	23	32	36	33	9	6	56	12	16	84
Diabetes mellitus	46	24	70	......	17	32	21	23	32	6	9	33	13	24	70
Other constitutional diseases	7	11	18	......	3	7	8	8	10	......	......	13	2	3	18
V.—Developmental Diseases	603	555	1,138	20	579	259	320	592	170	149	247	662	219	277	1,158
Premature birth	255	189	435	9	444	......	......	444	......	......	......	287	69	88	444
Atelectasis	11	9	19	1	20	......	......	20	......	......	......	10	2	8	20
Cyanosis	27	14	40	1	41	......	......	41	......	......	......	18	7	16	41
Spina bifida	8	13	21	......	21	......	......	21	......	......	......	10	5	6	21
Other congenital defects	18	9	26	1	27	......	......	27	......	......	......	11	8	8	27
Umbilical hemorrhage	4	1	5	......	5	......	......	5	......	......	......	2	1	2	5
Old age	280	320	592	8	21	259	320	34	170	149	247	324	127	149	600
VI.—Local Diseases	9,545	8,265	17,437	373	7,018	6,226	4,566	9,840	5,872	849	1,249	11,190	2,959	3,661	17,810
A.—NERVOUS SYSTEM	1,864	1,371	3,186	49	1,685	991	559	2,196	747	117	175	2,137	493	605	3,235
Inflammation of the brain	132	119	249	2	127	94	30	193	51	2	5	138	48	65	251
Apoplexy	331	251	573	9	135	215	232	213	270	36	63	322	111	149	582
Softening of brain	54	32	86	......	27	46	13	16	50	10	10	45	15	26	86
Hydrocephalus, not acute	7	10	15	1	13	1	3	17	......	......	......	11	1	5	17
Hemiplegia	27	30	56	1	6	31	20	11	25	9	12	36	10	11	57
Paralysis agitans	13	16	29	......	8	11	10	6	18	2	3	6	6	17	29
General paralysis of insane	38	19	56	1	14	23	20	17	36	3	1	44	6	7	57
Paraplegia	13	1	12	2	4	5	5	3	8	......	3	5	3	6	14
Chorea	5	1	6	......	6	......	......	6	......	......	......	4	....	2	6
Epilepsy	58	24	81	1	22	44	16	54	22	4	2	45	10	27	82

Table II.—Continued.

CAUSES OF DEATH.	SEX.		COLOR.		NATIVITY.			SOCIAL CONDITION.				LOCALITY.			Totals..............
	Male..........	Female........	White.........	Colored.......	Illinois.	United States.	Foreign........	Single	Married.......	Widower......	Widow,.......	Cities or towns over 5,000 pop.	Towns under 5,000 over 500 population...	Towns or villages under 500 pop. or in country.....	
Convulsions	822	616	1,420	18	1,119	278	41	1,393	37	2	6	1,155	151	132	1,438
Trismus nascentium........................	45	33	78	......	78	......	......	78	......	......	......	63	7	8	78
Tetanus..	48	23	67	4	46	18	7	62	7	2	......	45	11	15	71
Diseases of spinal cord..........................	31	13	43	1	13	19	12	26	15	3	......	24	9	11	44
Other diseases, nervous system...................	240	183	414	9	67	206	150	101	208	44	70	194	105	124	423
B.—ORGANS OF SPECIAL SENSE..........................	......	2	2	......	2	......	......	2	......	......	......	....	....	2	2
Epistaxis	......	1	1	......	1	......	......	1	......	......	......	....	....	1	1
Other diseases, nose, ear and eye.......................	......	1	1	......	1	......	......	1	......	......	......	....	....	1	1
C.—CIRCULATORY SYSTEM..............................	631	589	1,203	17	174	538	508	325	649	100	146	754	222	244	1,220
Endocarditis..	22	18	39	1	13	9	18	19	17	2	2	38	4	8	40
Pericarditis..	29	18	47	......	7	22	18	19	21	2	5	35	5	7	47
Hyperophy of heart..	28	23	49	2	9	21	21	11	28	7	5	28	12	11	51
Angina pectoris..	20	15	35	......	6	24	5	8	18	......	9	14	11	19	35
Valve-disease of heart......................................	166	166	330	2	48	134	150	81	188	28	35	198	62	72	332
Syncope..	3	7	9	1	2	5	3	1	4	1	4	8	1	1	10
Aneurism..	12	5	17	......	12	5	......	3	11	2	1	9	3	5	17
Senile gangrene..	18	15	33	......	1	26	6	2	19	6	6	8	16	9	33
Embolism	60	69	127	2	22	68	39	26	68	14	21	67	28	34	129
Phlebitis..	2	2	4	......	......	1	3	1	2	1	......	4	....	....	4
Varicose veins..	3	2	5	......	......	1	4	......	4	......	1	2	2	1	5
Other diseases, circulatory system........................	268	249	508	9	54	222	241	154	269	37	57	353	78	86	517
D—RESPIRATORY SYSTEM....................................	2,435	1,949	4,298	86	1,971	1,526	887	2,971	1,019	150	244	2,676	722	986	4,384
Laryngitis	30	17	46	1	28	15	4	40	7	......	......	29	10	8	47
Croup..	396	319	711	4	382	306	27	709	4	......	2	471	120	124	715
Other diseases, larynx and trachea..........................	2	4	6	......	3	......	3	2	3	1	......	4	....	2	6
Emphysema	12	3	15	......	1	2	12	2	7	5	1	13	....	2	15
Asthma..	39	36	93	2	9	29	37	21	39	3	12	46	11	18	75
Bronchitis	593	524	1,100	17	599	351	167	855	162	28	72	829	132	156	1,117

Pneumonia	1,143	886	1,980	49	830	678	521	1,158	642	94	135	1,115	363	551	2,029
Typhoid pneumoia	138	101	229	10	73	92	74	118	101	11	9	105	54	80	239
Pleurisy	27	12	38	1	8	15	16	13	20	2	4	23	5	11	39
Other diseases, respiratory system	55	47	100	2	38	38	26	53	34	6	9	41	27	34	102
E—DIGESTIVE SYSTEM	1,297	1,090	2,351	36	1,128	765	494	1,532	670	76	109	1,544	370	473	2,387
Stomatitis	19	12	30	1	9	17	5	12	16	1	2	12	8	11	31
Dentition	35	31	66	......	42	24	......	66	......	......	......	44	11	11	66
Sore throat	14	16	29	1	11	14	5	26	3	1	......	10	9	11	30
Dyspepsia	21	9	30	......	14	12	4	19	9	2	......	13	8	9	30
Hematemesis	4	2	6	......	2	......	4	2	4	......	......	4	1	1	6
Melana	......	4	4	......	2	1	1	2	2	......	......	2	1	1	4
Disease of stomach	117	107	221	3	86	76	62	107	88	12	17	137	35	52	224
Enteritis	283	233	510	6	355	109	52	449	50	5	12	387	56	73	516
Ulceration of intestines	20	19	38	1	8	22	9	14	21	2	2	22	13	4	39
Ileus	9	4	13	......	4	3	6	4	7	......	2	5	5	3	13
Stricture and strangulation of intestines	13	9	22	......	5	7	10	10	9	2	1	11	4	7	22
Intussusception	23	10	33	......	16	7	10	21	10	2	......	14	7	12	33
Hernia	19	10	28	1	10	8	11	8	15	2	4	13	7	9	29
Fistula	3	1	4	......	1	2	1	3	1	......	......	3	1	....	4
Peritonitis	222	260	471	11	144	198	140	264	179	16	23	281	81	120	482
Ascites	9	11	18	2	4	10	6	2	13	2	3	8	3	9	20
Gallstones	3	3	6	......	2	3	1	1	5	......	......	2	2	2	6
Jaundice	29	33	62	......	36	13	13	30	16	7	9	46	5	11	62
Cirrhosis	55	18	72	1	5	26	42	11	56	5	1	47	11	15	73
Other diseases of liver	90	80	167	3	48	79	43	54	92	8	16	94	29	47	170
Other diseases, digestive system	309	218	521	6	324	134	69	427	74	9	17	389	73	65	527
F.—LYMPHATIC SYSTEM	11	7	17	1	6	6	6	7	11	......	......	12	2	4	18
Disease of lymphatics	2	......	2	......	1	1	.	1	1	......	......	2	....	....	2
Disease of spleen	9	7	15	1	5	5	6	6	10	......	......	10	2	4	16
G.—GLAND-LIKE ORGANS OF UNCERTAIN USE	8	7	15	......	2	10	3	6	9	......	......	7	5	3	15
Bronchocele	4	6	10	......	1	7	2	4	6	......	......	3	4	3	10
Addison's disease	4	1	5	......	1	3	1	2	3	......	......	4	1	....	5
H.—URINARY SYSTEM	458	234	679	13	111	335	246	214	369	57	52	437	124	131	692
Nephritis	105	71	172	4	37	81	58	88	66	7	15	145	16	15	176
Bright's disease	199	108	300	7	36	152	119	73	184	24	26	197	56	54	307
Uremia	47	30	76	1	17	40	20	24	39	7	7	45	19	13	77
Suppression of urine	8	3	11	......	2	5	4	2	8	......	1	3	3	5	11
Calculus	8	3	11	......	3	5	3	4	5	......	2	5	1	5	11

Table II.—Continued.

CAUSES OF DEATH.	SEX.		COLOR.		NATIVITY.			SOCIAL CONDITION.				LOCALITY.			Totals
	Male	Female	White	Colored	Illinois	United States	Foreign	Single	Married	Widower	Widow	Cities or towns over 5,000 pop.	Towns under 5,000, over 500 population	Towns or villages under 500 pop. or in country	
Hematuria	2	2	4	......	2	1	1	3	2	......	......	....	1	3	4
Disease of bladder and prostate	17	2	18	1	5	12	2	3	11	5	......	3	10	6	19
Other diseases, urinary system	72	15	87	......	9	39	39	18	54	14	1	39	18	30	87
I.—REPRODUCTIVE ORGANS	13	227	232	8	78	81	81	48	183	1	8	97	59	84	240
a. Organs of Generation	13	94	105	2	28	41	38	31	69	1	6	52	24	31	107
Ovarian disease	......	16	15	1	2	6	8	4	10	......	2	9	5	2	16
Disease of uterus and vagina	......	48	48	......	13	18	17	13	34	......	1	20	11	17	48
Disorders of menstruation	......	17	17	......	6	7	4	7	8	......	2	10	3	4	17
Pelvic abscess	2	12	13	1	4	6	4	2	11	......	1	6	2	6	14
Perineal abscess	1	1	2	......	1	......	1	1	......	1	......	2	....	....	2
Diseases or testes, penis, &c	10	......	10	......	2	4	4	4	6	......	......	5	3	2	10
b. Parturition	......	133	127	6	50	40	43	17	114	......	2	45	35	53	133
Abortion	......	7	6	1	3	3	1	2	5	......	......	2	2	3	7
Miscarriage	......	13	11	2	5	4	4	1	11	......	1	9	2	2	13
Puerperal mania	......	10	10	......	4	3	3	1	9	......	......	2	3	5	10
Puerperal convulsions	......	31	28	3	13	10	8	8	23	......	......	9	8	14	31
Placenta prævia	......	8	8	......	3	1	4	1	7	......	......	3	2	3	8
Flooding	......	18	18	......	4	6	8	......	18	......	......	9	1	8	18
Phlegmasia dolens	......	3	3	......	......	2	1	1	2	......	......	2	1	....	3
Other complications of childbirth	......	43	43	......	18	11	14	3	39	......	1	9	16	18	43
K.—LOCOMOTOR SYSTEM	24	17	37	4	13	17	11	20	18	2	1	23	10	8	41
Caries and necrosis	7	3	9	1	3	4	3	6	4	......	......	7	2	1	10
Arthritis	5	2	7	......	1	3	3	4	1	1	1	5	1	1	7
Ostitis	4	2	6	......	1	4	1	2	4	......	......	4	1	1	6
Other diseases, locomotor system	8	10	15	3	8	6	4	8	9	1	......	7	6	5	18

L.—INTEGUMENTARY SYSTEM	20	20	40	......	13	10	17	15	18	3	4	21	8	11	40
Carbuncle	8	6	14	......	2	4	8	1	12	1	......	6	4	4	14
Phlegmon	1	1	2	......	......	1	1	......	......	1	1	......	......	2	2
Lupus	1	2	3	......	1	1	1	1	2	......	......	2	1	......	3
Ulcer	4	6	10	......	2	3	5	4	3	......	3	7	1	2	10
Eczema	3	2	5	......	5	......	......	5	......	......	......	3	1	1	5
Pemphigus	1	......	1	......	......	......	1	......	......	1	......	......	1	......	1
Other diseases, integumentary system	2	3	5	......	3	1	1	4	1	......	......	3	......	2	5
VII.—Violence	1,415	304	1,693	26	422	591	706	933	682	66	38	1,047	274	398	1,719
Railroad accident	314	31	341	4	76	129	140	206	125	10	4	212	59	74	345
Other accident	818	190	995	13	253	355	400	579	363	41	25	632	152	224	1,008
Homicide	56	12	61	7	76	27	15	33	31	3	1	21	19	28	68
Suicide	226	71	295	2	67	80	150	114	163	12	8	181	44	72	297
Execution	1	......	1	......	......	......	1	1	......	......	......	1	......	......	1
VIII.—Otherwise Unclassified	1,239	994	2,188	45	1,114	628	491	1,360	619	87	167	1,296	388	549	2,233
Dropsy	112	79	187	4	33	93	65	53	97	11	30	80	41	70	191
Debility	59	43	101	1	43	35	24	52	29	7	14	60	18	24	102
Atrophy from inanition	272	219	485	6	438	36	17	470	15	1	5	390	64	37	491
Mortification	31	18	49	......	7	22	20	10	26	9	4	26	5	18	49
Tumor	24	26	49	1	7	20	23	17	24	5	4	30	10	10	50
Abscess	74	45	117	2	37	47	35	59	53	5	2	59	19	41	119
Hemorrhage	28	28	54	2	22	13	21	22	25	3	6	30	11	15	56
Sunstroke	24	16	40	......	7	13	20	10	22	5	3	13	10	17	40
Sudden—not stated	10	5	15	......	7	2	6	8	3	1	3	7	4	4	15
Ill-defined	416	370	767	19	339	253	194	434	239	30	83	467	141	178	786
Unknown	189	145	324	10	174	94	66	225	86	10	13	134	65	135	334

TABLE III.—*Deaths from Specified Causes (classified) reported in Illinois during the year 1886:* MONTHS.

CAUSES OF DEATH.	MONTHS.												Totals
	January	February	March	April	May	June	July	August	September	October	November	December	
Total deaths from all causes	2,286	2,036	2,774	2,569	2,151	2,148	2,774	2,848	2,477	2,377	2,484	2,510	29,434
I.—Specific Febrile or Zymotic Diseases	524	395	478	477	410	528	1,037	1,081	802	730	638	572	7,672
A.—MIASMATIC DISEASES	426	288	362	354	291	331	329	447	396	522	515	451	4,712
Small-pox	3	2	6	2	2	......	......	......	......	1	......	......	16
Chicken-pox	......	......	......	1	......	......	......	......	......	......	......	3	4
Measles	16	4	7	15	10	21	29	17	8	8	13	33	181
Scarlet fever	44	58	47	42	42	35	21	42	17	25	23	47	443
Typhus fever	3	2	3	5	3	3	2	2	2	1	3	2	31
Influenza	4	3	3	2	3	......	2	......	......	2	2	1	21
Mumps	......	......	1	......	1	......	4	3	1	......	1	1	12
Diphtheria	165	60	82	87	90	112	88	149	113	215	200	186	1,547
Cerebro-spinal fever	87	77	125	113	67	77	71	66	69	66	70	70	958
Whooping-cough	18	17	14	17	19	17	32	35	32	19	21	13	254
Continued fever	22	11	11	8	7	11	8	9	23	26	21	16	173
Enteric fever	63	52	62	62	45	53	71	120	130	157	158	75	1,048
Other miasmatic diseases	1	2	1	......	2	2	2	4	1	2	3	4	24
B.—DIARRHETIC DISEASES	26	29	29	43	40	137	633	541	329	136	41	43	2,027
Cholera infantum	6	6	9	16	22	112	530	415	226	68	17	17	1,444
Cholera morbus	4	2	3	2	2	3	22	23	11	4	1	4	81
"Winter cholera"	2	......	1	......	......	......	......	......	......	......	2	3	8
Diarrhea	7	17	12	15	11	14	44	52	32	31	12	10	257
Dysentery	7	4	4	10	5	8	37	51	60	33	9	9	237

C.—MALARIAL DISEASES	13	22	30	25	30	18	34	48	34	34	35	22	341
Intermittent fever	1	3	2	4	2	3	5	8	4	2	3	2	39
Remittent fever	7	8	11	12	15	4	7	16	17	17	20	10	144
Congestive fever	3	9	10	5	10	7	22	17	9	9	6	5	112
Other malarial diseases	2	2	7	4	3	4	1	2	4	6	6	5	46
E.—ZOÖGENEOUS DISEASES	......	......	1	2	......	......	1	5	2	3	4	7	25
Hydrophobia	......	......	......	......	......	......	......	......	......	1	1	......	2
Other zoögeneous	......	......	1	2	......	......	1	5	2	2	3	7	23
E.—VENEREAL DISEASES	3	3	1	3	6	4	5	5	4	2	4	3	43
Syphilis	3	3	1	3	6	4	5	5	4	2	3	3	42
Other venereal diseases	......	......	......	......	......	......	......	......	......	......	1	......	1
F.—SEPTIC DISEASES	56	53	55	50	43	38	34	40	37	33	39	46	524
Phagedena	......	......	......	......	1	......	......	......	1	......	......	......	2
Erysipelas	14	15	16	8	13	7	6	9	7	13	7	15	130
Pyemia	6	2	5	11	4	3	5	2	4	4	3	......	49
Septicemia	15	12	13	13	8	19	7	18	17	11	8	14	155
Puerperal fever	21	24	21	18	17	9	16	11	8	5	21	17	183
II.—Parasitic Diseases	4	2	1	2	......	3	3	......	......	5	3	1	24
Thrush	3	1	......	2	......	3	2	......	......	5	2	......	18
Hydatids	......	......	......	......	......	......	......	......	......	......	1	......	1
Worms	......	......	......	......	......	......	1	......	......	......	......	1	2
Trichiniasis	1	1	......	......	......	......	......	......	......	......	......	......	2
Other parasitic diseases	......	......	1	......	......	......	......	......	......	......	......	......	1
III.—Dietic Diseases	8	2	7	10	6	7	11	9	13	8	16	10	107
Starvation	2	......	3	......	......	......	3	1	2	1	1	......	13
Scurvy	2	......	......	......	1	......	......	......	......	......	......	......	3
Alcoholism	2	......	3	6	5	6	4	7	8	4	14	9	68
Delirium tremens	2	2	1	4	......	1	4	1	3	3	1	1	23
IV.—Constitutional Diseases	340	288	428	417	366	354	334	349	325	315	371	360	4,247
Rheumatic fever	8	6	5	5	......	6	3	......	6	4	1	2	46
Rheumatic heart	6	3	4	1	4	4	4	4	4	3	5	5	47
Rheumatism	9	8	14	8	7	6	11	5	2	4	4	8	86
Gout	......	......	......	1	......	......	......	......	......	......	......	......	1

Table III.—Continued.

CAUSES OF DEATH.	MONTHS.												Totals
	January	February	March	April	May	June	July	August	September	October	November	December	
Rickets	......	1	1	......	1	......	3	......	......	......	3	1	10
Cancer	46	31	46	71	49	60	47	51	54	42	51	60	608
Tabes mesenterica	23	14	20	19	18	19	30	39	44	29	20	17	292
Tubercular meningitis	12	7	12	15	22	10	17	27	11	9	8	19	169
Phthisis	217	198	304	272	246	227	199	194	188	200	258	211	2,714
Scrofula	5	5	7	4	5	8	5	6	3	7	6	12	73
Purpura	......	2	2	4	4	2	4	6	......	2	1	2	29
Anemia	6	4	3	11	6	6	5	9	11	8	7	8	84
Diabetes mellitus	5	9	6	5	4	4	4	6	2	7	6	12	70
Other constitutional diseases	3	......	4	1	......	2	2	2	......	......	1	3	18
V.—Developmental Diseases	99	90	111	90	95	106	103	81	86	85	98	114	1,158
Premature birth	32	35	35	40	40	37	46	38	31	36	36	38	444
Atelectasis	1	4	1	4	3	1	1	1	1	1	......	2	20
Cyanosis	4	2	1	2	4	3	5	6	4	3	1	6	41
Spina bifida	4	2	1	......	1	......	3	......	1	1	5	3	21
Other congenital defects	3	......	3	......	1	......	2	3	......	3	7	5	27
Umbilical hemorrhage	......	1	1	......	......	......	1	......	1	1	......	......	5
Old age	55	46	69	44	46	65	45	33	48	40	49	60	600
VI.—Local Diseases	1,499	1,363	1,996	1,790	1,399	1,295	1,330	1,418	1,293	1,321	1,488	1,618	17,810
A.—NERVOUS SYSTEM	279	254	330	281	249	252	274	301	263	247	253	252	3,235
Inflammation of brain	16	16	29	21	21	14	13	40	24	10	21	26	251
Apoplexy	45	46	53	54	56	48	38	54	47	53	40	48	583
Softening of brain	12	7	10	8	8	6	7	7	2	8	5	6	86
Hydrocephalus, not acute	3	2	3	......	2	......	......	2	2	1	1	1	17
Hemiplegia	4	6	7	3	6	4	10	1	3	4	5	4	57
Paralysis agitans	......	3	4	5	......	1	2	5	3	2	3	1	29
General paralysis of insane	10	10	6	3	6	3	4	2	2	4	3	4	57

Paraplegia	2	....	....	1	2	2	....	1	1	3	2	....	14
Chorea	1	....	....	2	....	....	....	1	1	1	....	....	6
Epilepsy	11	5	9	7	8	7	6	4	5	9	5	6	82
Convulsions	120	115	165	132	95	124	142	129	122	93	99	102	1,438
Trismus nascentium	5	4	7	3	6	5	5	10	8	9	7	9	78
Tetanus	7	3	1	5	3	8	9	9	7	11	6	2	71
Diseases of spinal cord	6	4	1	4	2	2	5	1	6	3	6	4	44
Other diseases, nervous system	37	33	35	33	34	28	33	35	30	36	50	39	423
B.—ORGANS OF SPECIAL SENSE	1	....	....	....	....	....	....	....	....	....	1	....	2
Epistaxis	1	....	....	....	....	....	....	....	....	....	....	....	1
Other diseases, nose, ear and eye	....	....	....	....		....	....	....	....	....	1	....	1
C.—CIRCULATORY SYSTEM	103	79	115	109	114	89	82	101	80	105	103	140	1,220
Endocarditis	5	4	3	9	5	2	3	1	1	2	2	3	40
Pericarditis	5	3	7	7	6	2	3	3	....	3	4	4	47
Hypertrophy of heart	6	5	2	4	7	5	2	5	2	4	6	3	51
Angina pectoris	3	5	5	5	4	2	1	2	1	4	1	2	35
Valve-disease of heart	27	17	34	31	30	23	24	26	25	31	31	33	332
Syncope	2	1	1	....	....	1	1	....	....	1	....	3	10
Aneurism	2	....	....	2	....	2	1	3	2	....	1	4	17
Senile gangrene	2	3	4	4	3	1	3	3	1	1	3	5	33
Embolism	5	6	10	11	7	16	12	12	11	18	10	11	129
Phlebitis	....	....	....	....	....	1	....	....	....	....	2	1	4
Varicose veins	....	....	....	....	....	2	1	....	1	....	....	1	5
Other diseases, circulatory system	46	35	49	36	52	32	31	46	36	41	43	70	517
D.—RESPIRATORY SYSTEM	403	436	686	611	342	202	167	171	192	275	426	473	4,384
Laryngitis	2	2	4	6	4	2	3	3	3	4	10	4	47
Croup	87	54	64	42	32	17	20	24	46	93	139	97	715
Other diseases, larynx and trachea	1	....	....	....	....	1	1	....	1	....	2	....	6
Emphysema	2	1	2	1	....	4	1	....	1	1	....	2	15
Asthma	5	5	9	7	7	6	3	7	5	6	7	8	75
Bronchitis	88	109	194	178	105	70	49	47	48	56	76	97	1,117
Pneumonia	173	229	346	321	165	84	76	73	71	96	164	231	2,029
Typhoid pneumonia	31	26	51	31	15	7	7	11	9	12	19	20	239
Pleurisy	5	2	6	5	6	2	2	1	2	2	3	3	39
Other diseases, respiratory system	9	8	10	20	8	9	5	5	6	5	6	11	102
E.—DIGESTIVE SYSTEM	175	139	221	175	147	200	283	299	239	206	146	157	2,387
Stomatitis	4	....	4	4	3	1	2	3	3	2	1	4	31
Dentition	6	4	15	7	6	5	1	4	3	9	1	5	66
Sore throat	5	4	2	....	1	3	....	3	1	5	3	3	30
Dyspepsia	4	1	4	1	2	3	5	....	2	4	2	2	30

Table III.—Continued.

CAUSES OF DEATH.	MONTHS.												Totals
	January	February	March	April	May	June	July	August	September	October	November	December	
Hematemesis	......	......	......	2	......	1	2	1	......	......	......	......	6
Melana	1	1	......	1	......	1	......	......	......	......	......	......	4
Disease of stomach	23	13	27	20	15	19	15	24	15	21	17	15	224
Enteritis	25	17	40	27	20	55	73	86	68	54	26	25	516
Ulceration of intestines	3	3	4	3	2	2	4	5	2	4	1	6	39
Ileus	3	2	1	1	2	1	......	......	......	1	1	1	13
Stricture and strangulation of intestines	3	1	3	1	1	1	......	3	1	4	2	2	22
Intussusception	......	......	2	2	5	1	4	3	4	5	6	1	33
Hernia	4	2	3	1	2	2	1	2	2	4	3	3	29
Fistula	......	1	......	......	1	1	1	......	......	......	......	......	4
Peritonitis	35	37	42	37	36	32	45	52	45	41	39	41	482
Ascites	3	3	2	2	1	......	1	1	2	......	3	2	20
Gallstones	1	......	......	2	......	1	......	1	......	......	1	......	6
Jaundice	6	3	9	2	2	9	8	5	6	6	3	3	62
Cirrhosis	8	8	6	9	6	6	4	1	11	1	3	10	73
Other diseases of liver	12	18	17	16	10	19	16	16	14	12	11	9	170
Other diseases, digestive system	29	21	40	37	32	37	101	89	60	33	23	25	527
F.—LYMPHATIC SYSTEM	1	1	1	1	2	2	1	2	2	1	1	3	18
Disease of lymphatics	......	......	1	......	......	1	......	......	......	......	......	......	2
Disease of spleen	1	1	......	1	2	1	1	2	2	1	1	3	16
G.—GLAND-LIKE ORGANS OF UNCERTAIN USE	1	1	2	3	......	......	.....	1	1	2	1	3	15
Bronchocele	1	......	1	3	......	......	......	......	......	2	1	2	10
Addison's disease	......	1	1	......	......	......	......	1	1	......	......	1	5
H.—UNINARY SYSTEM	56	45	70	66	58	52	54	69	59	49	45	69	692
Nephritis	16	11	18	15	12	13	16	19	13	9	16	18	176
Bright's disease	21	21	29	33	35	19	24	27	23	23	18	34	307

Uremia	8	2	9	8	1	11	2	8	5	8	7	8	77
Suppression of urine	2	......	2	1	......	1	2	......	1	2	......	......	11
Calculus	......	2	2	......	......	......	3	1	2	......	......	1	11
Hematuria	......	......	......	......	1	......	......	......	2	1	......	......	4
Disease of bladder and prostate	......	3	3	3	1	......	......	7	1	......	......	1	19
Other diseases, urinary system	9	6	7	6	8	8	7	7	12	6	4	7	87
I.—REPRODUCTIVE ORGANS	22	19	18	21	15	23	13	25	26	15	19	24	240
a. Organs of Generation	7	10	5	12	6	11	8	13	10	5	9	11	107
Ovarian disease	......	......	1	3	......	4	......	3	1	3	......	1	16
Disease of uterus and vagina	4	3	3	5	2	2	5	5	7	1	5	6	48
Disorders of menstruation	1	1	......	2	1	4	2	1	1	......	2	2	17
Pelvic abscess	1	1	......	1	2	1	1	4	1	1	1	......	14
Perineal abscess	......	......	......	1	1	......	......	......	......	......	......	......	2
Diseases of testes, penis, etc	1	5	1	......	......	......	......	......	......	......	1	2	10
b. Parturition	15	9	13	9	9	12	5	12	16	10	10	13	133
Abortion	......	......	1	......	1	1	1	1	......	......	1	1	7
Miscarriage	1	......	3	2	3	1	......	1	......	2	......	......	13
Puerperal mania	3	......	2	1	......	......	......	......	2	1	1	......	10
Puerperal convulsions	3	2	3	2	2	3	1	3	4	1	3	4	31
Placenta prævia	......	......	1	1	......	2	......	......	2	1	......	1	8
Flooding	1	1	......	1	......	1	2	4	4	2	......	2	18
Phlegmasia dolens	2	......	......	......	1	......	......	......	......	......	......	......	3
Other complications of childbirth	5	6	3	2	2	4	1	3	4	3	5	5	43
K.—LOCOMOTOR SYSTEM	4	5	4	2	1	2	3	5	4	4	1	6	41
Caries and necrosis	1	1	......	1	......	......	2	1	......	2	......	2	10
Arthritis	1	1	1	......	......	1	1	......	1	......	1	......	7
Ostitis	......	1	1	1	1	......	......	1	......	1	......	......	6
Other diseases, locomotor system	2	2	2	......	......	1	......	3	3	1	......	4	18
L.—INTEGUMENTARY SYSTEM	3	2	2	2	4	3	2	5	3	4	4	6	40
Carbuncle	......	......	2	......	1	1	1	4	2	1	1	1	14
Phlegmon	......	......	......	......	......	1	......	......	......	......	......	1	2
Lupus	......	1	......	......	......	......	1	......	......	1	......	......	3
Ulcer	2	......	......	1	1	1	......	1	1	......	1	2	10
Eczema	1	......	......	1	......	......	......	......	......	1	1	1	5
Pemphigus	......	......	......	......	......	......	......	......	......	1	......	......	1
Other diseases, integumentary system	......	1	......	......	2	......	......	......	......	......	1	1	5

Table III.—Continued.

CAUSES OF DEATH.	MONTHS.												Totals
	January	February	March	April	May	June	July	August	September	October	November	December	
VII.—Violence	82	101	100	146	155	144	192	156	192	144	166	141	1,719
Railroad accident	17	15	13	16	25	19	31	38	55	42	49	25	345
Other accident	49	63	67	94	92	92	111	88	99	73	89	91	1,008
Homicide	2	6	2	5	6	5	10	3	10	4	8	7	68
Suicide	13	17	18	31	32	28	40	27	28	25	20	18	297
Execution	1	......	......	......	......	......	......	......	......	......	......	......	1
VIII.—Otherwise Unclassified	181	177	200	156	187	181	215	193	190	182	192	179	2,233
Dropsy	20	14	26	14	23	11	16	16	9	12	22	8	191
Debility	9	6	12	8	8	7	12	10	7	5	10	8	102
Atrophy from inanition	44	41	60	31	33	43	49	42	53	32	35	28	491
Mortification	8	6	1	2	3	3	3	4	3	6	3	7	49
Tumor	......	5	1	6	8	5	5	5	3	6	5	1	50
Abscess	6	7	6	4	12	11	15	6	13	10	14	15	119
Hemorrhage	3	4	3	1	4	5	5	5	8	5	7	6	56
Sunstroke	......	......	2	2	1	5	9	15	6	......	......	......	40
Sudden—not stated	1	3	1	2	......	1	2	......	......	......	2	3	15
Ill-defined	66	65	61	65	70	67	70	65	52	75	68	62	786
Unknown	24	26	27	21	25	23	29	25	36	31	26	41	334

TABLE IV.--*Deaths from Specified Causes (classified) reported in Cook County during the year 1886:* AT GIVEN AGES.

CAUSES OF DEATH.	AGES.													
	Under 1 year..	Between 1 and 5 years......	5–10 years.....	10–15 years....	15–20 years....	20–30 years....	30–40 years....	40–50 years....	50–60 years....	60–70 years....	70–80 years....	80–90 years....	Over 90 years.	Totals ....
Total deaths from all causes	5,351	3,278	892	382	578	1,575	1,358	1,096	960	823	596	231	29	17,149
I.—Specific Febrile or Zymotic Diseases	1,481	1,655	522	160	175	378	224	110	72	67	35	3	......	4,882
A.—MIASMATIC DISEASES	475	1,339	503	150	139	253	126	66	36	33	19	......	......	3,139
Small-pox	1	......	......	......	......	......	2	......	......	......	......	......	......	3
Chicken-pox	1	2	......	......	......	......	......	......	......	......	......	......	......	3
Measles	39	103	10	......	1	......	......	2	......	2	1	......	......	158
Scarlet fever	18	187	64	16	4	3	4	4	......	......	......	......	......	300
Typhus fever	......	......	5	2	5	8	6	1	1	1	......	......	......	29
Influenza	......	......	......	......	1	......	......	1	......	......	......	......	......	2
Mumps	1	3	......	......	......	......	......	......	......	......	......	......	......	4
Diphtheria	95	692	303	60	21	16	5	4	1	2	3	......	......	1,202
Cerebro-spinal fever	248	243	70	16	11	27	17	15	5	8	3	......	......	663
Whooping-cough	60	65	3	2	1	......	......	......	......	......	......	......	......	131
Continued fever	2	3	1	2	2	8	5	4	3	1	3	......	......	34
Enteric fever	10	41	47	52	93	191	87	35	26	19	9	......	......	610
B.—DIARRHETIC DISEASES	942	276	8	3	3	16	16	8	14	16	11	2	......	1,315
Cholera infantum	807	224	......	......	......	......	......	......	......	......	......	......	......	1,031
Cholera morbus	9	3	2	2	......	7	4	2	2	4	4	......	......	39
"Winter cholera"	1	......	......	1	......	......	1	......	......	......	......	......	......	3
Diarrhea	96	34	3	......	2	6	7	3	5	8	4	1	......	169
Dysentery	29	15	3	......	1	3	4	3	7	4	3	1	......	73

Table IV.—Continued.

CAUSES OF DEATH.	AGES.													
	Under 1 year..	Between 1 and 5 years......	5-10 years.....	10-15 years....	15-20 years....	20-30 years....	30-40 years....	40-50 years....	50-60 years....	60-70 years....	70-80 years....	80-90 years....	Over 90 years.	Totals ....
C.—MALARIAL DISEASES	9	17	4	3	5	9	8	6	8	8	1	......	......	78
Intermittent fever	3	4	1	......	1	......	1	1	2	......	......	......	......	13
Remittent fever	4	12	2	1	3	3	2	3	3	6	1	......	......	40
Congestive fever	1	......	......	......	......	5	3	1	2	1	......	......	......	13
Other malarial diseases	1	1	1	2	1	1	2	1	1	1	......	......	......	12
E.—ZOÖGENEOUS DISEASES	6	4	......	......	3	2	3	1	1	1	......	......	......	21
Hydrophobia	......	1	......	......	1	......	......	......	......	......	......	......	......	2
Other zoögeneous diseases	6	3	......	......	2	2	3	1	1	1	......	......	......	19
E.—VENEREAL DISEASES	13	2	......	......	......	5	4	1	1	......	......	......	......	26
Syphilis	13	2	......	......	......	5	4	1	1	......	......	......	......	26
F.—SEPTIC DISEASES	36	17	7	4	25	93	67	28	12	9	4	1	......	303
Erysipelas	25	7	1	3	9	6	7	11	7	3	......	1	......	80
Pyemia	1	3	3	......	1	4	4	4	1	3	1	......	......	25
Septicemia	10	7	3	1	7	32	23	8	3	3	3	......	......	100
Puerperal fever	......	......	......	......	8	51	33	5	1	......	......	......	......	98
II.—Parasitic Diseases	11	2	1	......	......	......	......	......	......	......	......	......	......	14
Thrush	11	2	......	......	......	......	......	......	......	......	......	......	......	13
Trichiniasis	......	......	1	......	......	......	......	......	......	......	......	......	......	1

III.—Dietic Diseases	2	1				13	21	19	10	3	1			70
Starvation	2													2
Scurvy		1				1								2
Alcoholism						9	16	14	7	3				49
Delirium tremens						3	5	5	3		1			17
IV.—Constitutional Diseases	277	123	33	39	151	523	413	315	233	165	69	14		2,355
Rheumatic fever			1			7	3	4	2	1	1			19
Rheumatic heart		1		1		4	6	6	5	3	2			28
Rheumatism			1	2	4	5	7	8	5	6	3	1		42
Rickets	7	1												8
Cancer	6	5	2	1	4	16	45	73	86	70	28	5		341
Tabes mesenterica	144	32	2	1	1	2	4	2	2	10	7	3		210
Tubercular meningitis	58	22	2	4		1	4	1		1	1			94
Phthisis	35	49	21	23	138	473	335	209	121	65	21	5		1,495
Scrofula	9	8	3	3	2	5	4	1						35
Purpura		2						1						3
Anemia	17	1	1	2	2	5	2	6	8	7	5			56
Diabetes melitus	1	1		1		4	3	4	4	2	1			21
Other constitutional diseases		1		1		1								3
V.—Developmental Diseases	296									23	109	116	26	570
Premature birth	242													242
Atelectasis	17													17
Cyanosis	14													14
Spina bifida	13													13
Other congenital defects	8													8
Umbilical hemorrhage	2													2
Old age										23	109	116	26	274
VI.—Local Diseases	2,630	1,391	275	130	166	434	471	163	498	452	297	75	3	7,285
A.—NERVOUS SYSTEM	1,135	265	41	26	23	61	69	94	106	100	70	14	3	2,007
Inflammation of brain	47	36	6	5	3	6	7	6	7	5	2	2		132
Apoplexy	36	23	5	4	4	17	24	40	46	41	24	5	1	270
Softening of brain				1		2	2	4	8	7	6	1		31
Hydrocephalus, not acute	2	3							2	1				8
Hemiplegia	1	1	1			4	4	7	5	8	6			37
Paralysis agitans			1	1	1					2				5
General paralysis of insane							1	1	2	1				5
Paraplegia						1	1	2		2				6
Chorea		1		1										2
Epilepsy				3	2	5	3	3	2	1				19
Convulsions	949	195	23	4	2	12	6	4	6	8	4	1		1,214

Table IV.—Continued.

Causes of Death.	Ages.												
	Under 1 year..	Between 1 and 5 years......	5–10 years.....	10–15 years....	15–20 years....	20–30 years....	30–40 years....	40–50 years....	50–60 years....	60–70 years....	70–80 years....	80–90 years....	Over 90 years.	Totals...... .
Trismus nascentium	71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	71
Tetanus	25	1	1	3	4	4	4	1	.....	1	.....	.....	.....	44
Diseases of spinal cord	.....	1	.....	2	2	4	2	5	2	1	.....	.....	.....	19
Other diseases, nervous system	4	4	4	2	5	6	15	21	26	22	28	5	2	144
C.—CIRCULATORY SYSTEM	24	19	19	19	28	73	78	101	103	99	57	15	.....	635
Endocarditis	.....	.....	3	1	1	5	2	5	2	2	4	.....	.....	25
Pericarditis	.....	1	.....	.....	1	6	5	4	6	2	1	.....	.....	26
Hypertrophy of heart	.....	1	.....	.....	.....	.....	1	1	.....	2	6	1	.....	12
Angina pectoris	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	1	.....	.....	3
Valve-disease of heart	4	4	2	6	9	20	20	33	29	23	14	4	.....	168
Syncope	.....	.....	.....	.....	.....	1	1	.....	1	.....	.....	.....	.....	3
Aneurism	.....	.....	.....	.....	.....	.....	2	2	1	1	.....	.....	.....	6
Senile gangrene	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	.....	.....	3
Embolism	4	3	1	1	1	5	7	5	5	5	2	1	.....	40
Phlebitis	.....	.....	.....	.....	.....	.....	.....	.....	2	1	.....	.....	.....	3
Varicose veins	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	2
Other diseases, circulatory system	16	10	13	11	16	36	38	50	56	61	28	9	.....	344
D.—RESPIRATORY SYSTEM	780	852	159	44	58	123	126	112	135	126	84	30	.....	2,629
Laryngitis	6	9	1	.....	2	2	1	2	1	1	.....	.....	.....	25
Croup	69	329	84	2	3	2	1	1	2	.....	.....	.....	.....	493
Other diseases, larynx and trachea	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	2
Emphysema	.....	.....	.....	.....	1	1	.....	1	.....	4	1	1	.....	9
Asthma	2	2	1	.....	1	2	2	8	11	3	2	.....	.....	34
Bronchitis	418	264	16	8	10	13	16	13	29	35	20	9	.....	860
Pneumonia	277	241	51	17	26	81	85	77	80	80	47	16	.....	1,078
Typhoid pneumonia	8	6	5	16	12	19	14	6	3	1	1	1	.....	92
Pleurisy	.....	.....	1	1	2	1	5	1	1	.....	2	.....	.....	14
Other diseases, respiratory system	.....	1	.....	.....	1	2	2	2	7	2	2	3	.....	22

E.—Digestive System	663	223	36	25	35	112	95	99	79	76	42	9	.....	1,494
Stomatitis	3	.....	.....	.....	.....	.....	1	3	1	.....	.....	.....	.....	8
Dentition	24	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	54
Sore throat	2	3	.....	.....	.....	2	.....	1	1	1	.....	.....	.....	10
Dyspepsia	5	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
Hematemesis	1	.....	.....	.....	.....	.....	.....	.....	1	.....	2	1	.....	5
Melana	2	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	3
Disease of stomach	37	18	1	2	1	8	13	12	6	11	10	2	.....	121
Enteritis	250	66	7	6	5	11	5	8	9	6	8	1	.....	382
Ulceration of intestines	2	2	.....	1	1	3	4	2	1	1	.....	.....	.....	17
Ileus	1	.....	.....	.....	.....	.....	1	.....	2	.....	.....	.....	.....	4
Stricture and strangulation of intestines	.....	.....	1	.....	.....	2	2	1	1	.....	.....	.....	.....	7
Intussusception	3	4	.....	.....	1	1	3	1	2	1	1	.....	.....	17
Hernia	4	.....	.....	.....	.....	.....	1	1	4	1	4	.....	.....	15
Fistula	1	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	3
Peritonitis	35	15	17	14	24	64	36	28	8	13	4	.....	.....	258
Ascites	.....	.....	.....	.....	.....	.....	1	1	2	2	.....	.....	.....	6
Jaundice	17	.....	.....	.....	1	3	1	2	7	7	1	1	.....	40
Cirrhosis	.....	1	.....	.....	.....	1	6	17	11	10	2	.....	.....	48
Other diseases of liver	15	7	.....	.....	1	3	10	12	13	10	4	1	.....	76
Other diseases, digestive system	261	76	10	2	1	14	10	10	9	13	5	2	.....	414
F.—Lymphatic System	1	1	1	.....	.....	.....	4	1	1	1	.....	.....	.....	10
Disease of lymphatics	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Disease of spleen	.....	1	1	.....	.....	.....	4	1	1	1	.....	.....	.....	9
Gland-like Organs of Uncertain Use	.....	1	.....	.....	1	.....	1	1	.....	.....	1	.....	.....	5
Bronchocele	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	2
Addison's disease	.....	1	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	3
H.—Urinary System	19	28	17	11	14	43	56	40	71	42	37	7	.....	385
Nephritis	10	17	15	7	7	13	16	15	19	10	8	2	.....	139
Bright's disease	3	7	2	1	6	22	31	20	41	28	10	4	.....	175
Uremia	4	3	.....	1	1	5	8	2	5	2	5	.....	.....	36
Suppression of urine	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	2
Calculus	.....	.....	.....	.....	.....	.....	.....	.....	1	1	4	.....	.....	6
Hematuria	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1
Disease of bladder and prostate	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Other diseases, urinary system	1	1	.....	1	.....	2	1	3	4	1	10	1	.....	25

Table IV.—Continued.

Causes of Death.	Ages. Under 1 year..	Between 1 and 5 years......	5–10 years.....	10–15 years....	15–20 years....	20–30 years....	30–40 years....	40–50 years....	50–60 years....	60–70 years....	70–80 years....	80–90 years....	Over 90 years.	Totals ....
I.—REPRODUCTIVE ORGANS	2	1	......	4	6	19	36	12	2	1	......	......	......	83
a. Organs of Generation	2	1	......	3	2	8	13	8	2	1	......	......	......	40
Ovarian disease	......	......	......	......	......	3	2	2	1	......	......	......	......	8
Disease of uterus and vagina	......	......	......	......	2	3	7	3	......	......	......	......	......	15
Disorders of menstruation	......	......	......	3	......	2	1	2	1	......	......	......	......	9
Pelvic abscess	......	......	......	......	......	......	2	......	......	......	......	......	......	2
Perineal abscess	1	......	......	......	......	......	......	......	......	1	......	......	......	2
Diseases of testes, penis, etc	1	1	......	......	......	......	1	1	......	......	......	......	......	4
b. Parturition	......	......	......	1	4	11	23	4	......	......	......	......	......	43
Miscarriage	......	......	......	......	1	1	1	1	......	......	......	......	......	4
Puerperal mania	......	......	......	......	......	......	1	2	1	......	......	......	......	4
Puerperal convulsions	......	......	......	1	2	1	2	......	......	......	......	......	......	6
Placenta prævia	......	......	......	......	......	......	3	1	......	......	......	......	......	4
Flooding	......	......	......	......	1	2	3	1	......	......	......	......	......	7
Phlegmasia dolens	......	......	......	......	......	2	1	......	......	......	......	......	......	3
Other complications of childbirth	......	......	......	......	......	4	11	......	......	......	......	......	......	15
K.—LOCOMOTOR SYSTEM	......	......	2	1	1	2	5	3	......	2	3	......	......	19
Caries and necrosis	......	......	1	1	......	2	2	1	......	......	......	......	......	7
Arthritis	......	......	......	......	......	......	1	2	......	1	1	......	......	5
Ostitis	......	......	......	......	1	......	......	......	......	......	2	......	......	3
Other diseases, locomotor system	......	......	1	......	......	......	2	......	......	1	......	......	......	4
L.—INTEGUMENTARY SYSTEM	6	1	......	......	......	1	1	......	1	5	3	......	......	18
Carbuncle	1	......	......	......	......	......	......	......	......	3	2	......	......	6
Lupus	......	......	......	......	......	......	......	......	1	......	1	......	......	2

Ulcer	1	1	......	......	......	1	1	......	......	1	......	......	......	5
Eczema	3	......	......	......	......	......	......	......	......	......	......	......	......	3
Other diseases, integumentary system	1	......	......	......	......	......	......	......	......	1	......	......	......	2
VII.—Violence	15	48	47	44	66	157	156	127	77	48	25	5	......	815
Railroad accident	......	4	11	10	11	43	26	24	14	14	11	1	......	169
Other accident	14	43	36	33	50	90	98	66	39	21	12	3	......	505
Homicide	1	1	......	......	......	2	2	3	1	......	......	......	......	10
Suicide	......	......	......	1	5	21	30	34	23	13	2	1	......	130
Execution	......	......	......	......	......	1	..	......	......	......	......	......	......	1
VIII.—Otherwise Unclassified	639	58	14	9	20	70	73	62	70	65	60	18	......	1,158
Dropsy	2	5	3	2	2	10	9	10	11	5	8	1	......	68
Debility	27	3	1	1	1	......	2	2	1	5	4	3	......	50
Atrophy from inanition	416	16	3	......	2	3	1	2	7	3	2	......	......	455
Mortification	1	1	2	1	......	2	4	3	1	5	3	2	......	25
Tumor	1	1	......	......	1	5	6	4	2	2	3	......	......	25
Abscess	5	4	1	1	2	16	7	5	1	4	3	......	......	49
Hemorrhage	6	......	......	......	......	......	5	5	2	......	2	......	......	20
Sun stroke	......	......	......	......	......	1	3	1	......	......	......	......	......	5
Sudden—not stated	1	2	......	1	......	......	......	......	......	1	......	......	......	5
Ill-defined	151	18	3	3	8	21	30	21	38	33	32	11	......	369
Unknown	29	8	1	......	4	12	6	9	7	7	3	1	......	87

TABLE V.—*Deaths from Specified Causes (classsified) reported in Cook County during the year 1886:* SEX, NATIVITY, SOCIAL CONDITION AND LOCALITY.

CAUSES OF DEATH.	SEX.		COLOR.		NATIVITY.			SOCIAL CONDITION.				LOCALITY.			Totals...........
	Male..........	Female........	White.........	Colored.......	Illinois........	United States.	Foreign.......	Single	Married	Widower......	Widow........	Cities or towns over 5,000 pop.	Towns under 5,000, over 500 population...	Towns or villages under 500 pop. or in country......	
Total deaths from all causes..........................	9,480	7,669	16,955	194	6,948	5,849	4,352	12,105	3,831	471	742	14,769	1,576	804	17,149
I.—Specific Febrile or Zymotic Diseases..............	2,544	2,338	4,852	30	2,303	1,987	592	4,246	547	29	60	4,094	488	300	4,882
A.—MIASMATIC DISEASES..............................	1,667	1,472	3,122	17	1,289	1,490	360	2,803	296	13	27	2,642	309	188	3,139
Small-pox..	2	1	3	......	1	1	1	3	......	......	......	3	....	....	3
Chicken-pox......................................	2	1	3	......	1	2	......	3	......	......	......	3	....	....	3
Measles..	80	78	157	1	70	82	6	154	3	......	1	132	18	8	158
Scarlet fever....................................	158	142	300	......	121	170	9	293	7	......	......	238	42	20	300
Typhus fever.....................................	15	14	29	......	3	1	14	21	6	......	2	29	....	....	29
Influenza..	1	1	2	......	.....	1	1	1	1	......	......	2	....	....	2
Mumps..	2	2	4	......	1	2	1	4	......	......	......	4	....	....	4
Diphtheria.......................................	619	583	1,198	4	573	606	23	1,189	9	1	3	1,009	136	57	1,202
Cerebro-spinal fever.............................	369	294	658	5	353	261	49	606	47	5	5	505	37	61	663
Whooping-cough...................................	60	71	130	1	90	40	1	131	......	......	......	113	13	5	131
Continued fever..................................	16	18	34	......	6	15	13	16	16	2	......	26	5	3	34
Enteric fever....................................	343	267	604	6	70	298	242	382	207	5	16	518	58	34	610
B.—DIARRHETIC DISEASES.............................	716	599	1,305	10	919	343	53	1,251	44	8	12	1,102	131	82	1,315
Cholera infantum.................................	555	476	1,025	6	775	256	......	1,031	......	......	......	858	107	66	1,031
Cholera morbus...................................	25	14	38	1	9	9	21	20	16	1	2	34	3	2	39
"Winter cholera".................................	2	1	3	......	1	2	......	3	......	......	......	3	....	....	3
Diarrhea...	90	79	166	3	100	51	18	143	17	4	5	144	15	10	169
Dysentery..	44	29	73	......	34	25	14	54	11	3	5	63	6	4	73

C.—MALARIAL DISEASES	38	40	77	1	20	30	28	51	18	1	8	53	11	14	78
Intermittent fever	7	6	13	......	4	6	3	11	2	......	......	10	2	1	13
Remittent fever	18	22	39	1	8	14	18	26	9	......	5	33	4	3	40
Congestive fever	8	5	13	......	2	6	5	5	6	1	1	1	3	9	13
Other malarial diseases	5	7	12	......	6	4	2	9	1	......	2	9	2	1	12
E.—ZOÖGENOUS DISEASES	12	9	21	......	8	7	6	16	2	......	3	8	10	3	21
Hydrophobia	1	1	2	......	2	......	......	2	......	......	......	1	1	......	2
Other zoögenous diseases	11	8	19	......	6	7	6	14	2	......	3	7	9	3	19
E.—VENEREAL DISEASES	18	8	25	1	16	5	5	23	1	1	1	26	......	......	26
Syphilis	18	8	25	1	16	5	5	23	1	1	1	26	......	......	26
F.—SEPTIC DISEASES	93	210	302	1	51	112	140	102	186	6	9	263	27	13	303
Phagadena	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Erysipelas	42	38	80	......	30	18	32	45	26	1	8	67	8	5	80
Pyemia	14	11	25	......	3	10	12	15	8	2	......	22	2	1	25
Septicemia	37	63	99	1	13	51	36	37	59	3	1	89	8	3	100
Puerperal fever	......	98	98	......	5	33	60	5	93	......	......	85	9	4	98
II.—Parasitic Diseases	6	8	14	......	14	......	......	14	......	......	......	14	......	......	14
Thrush	6	7	13	......	13	......	......	13	......	......	......	13	......	......	13
Trichiniasis	......	1	1	......	1	......	......	1	......	......	......	1	......	......	1
III.—Dietic Diseases	52	18	70	......	23	33	14	28	32	5	5	64	5	1	70
Starvation	1	1	2	......	2	......	......	2	......	......	......	2	......	......	2
Scurvy	1	1	2	......	1	......	1	1	1	......	......	2	......	......	2
Alcoholism	34	15	49	......	16	25	8	19	21	4	5	45	3	1	49
Delirium tremens	16	1	17	......	4	8	5	6	10	1	......	15	2	......	17
IV.—Constitutional Diseases	1,212	1,143	2,299	56	404	926	1,025	1,125	990	111	129	2,075	199	81	2,355
Rheumatic fever	8	11	19	......	......	9	10	5	10	1	3	18	1	......	19
Rheumatic heart	14	14	26	2	2	14	12	9	15	3	1	27	......	1	28
Rheumatism	24	18	41	1	......	21	21	8	25	6	3	33	6	3	42
Rickets	4	4	8	......	6	2	......	8	......	......	......	8	......	......	8
Cancer	146	195	339	2	23	108	210	73	215	25	28	311	20	10	341
Tabes mesenterica	108	102	208	2	138	41	31	184	16	3	7	176	23	11	210
Tubercular meningitis	51	43	93	1	63	27	4	88	5	1	......	83	8	3	94
Phthisis	782	713	1,449	46	135	664	696	674	677	62	82	1,315	130	50	1,495

Table V.—Continued.

CAUSES OF DEATH.	SEX.		COLOR.		NATIVITY.			SOCIAL CONDITION.				LOCALITY.			Totals..............
	Male..........	Female........	White.........	Colored.......	Illinois........	United States.	Foreign.......	Single........	Married.......	Widower	Widow........	Cities or towns over 5,000 pop.	Towns under 5,000, over 500 population...	Towns or villages under 500 pop. or in country......	
Scrofula	18	17	33	2	12	17	6	32	2	1	......	29	5	1	35
Purpura	2	1	3	......	......	3	......	3	......	......	......	3	......	......	3
Anemia	36	20	56	......	19	12	25	29	16	7	4	50	4	2	56
Diabetes mellitus	18	3	21	......	4	7	10	9	9	2	1	19	2	......	21
Other constitutional diseases	1	2	3	......	2	1	......	3	......	......	......	3	......	......	3
V.—Developmental Diseases	283	287	564	6	293	75	202	311	59	67	133	471	69	30	570
Premature birth	143	99	240	2	242	......	......	242	......	......	......	209	24	9	242
Atelectasis	7	10	16	1	15	1	......	17	......	......	......	15	......	2	17
Cyanosis	8	6	14	......	14	......	......	14	......	......	......	11	2	1	14
Spina bifida	4	9	13	......	13	......	......	13	......	......	......	10	2	1	13
Other congenital defects	3	5	8	......	4	3	1	8	......	......	......	8	......	......	8
Umbilical hemorrhage	2	......	2	......	2	......	......	2	......	......	......	2	......	......	2
Old age	116	158	271	3	2	71	201	15	59	67	133	216	41	17	274
VI.—Local Diseases	4,058	3,227	7,205	80	3,202	2,287	1,796	5,098	1,637	210	340	6,334	636	315	7,285
A.—NERVOUS SYSTEM	1,146	861	1,990	17	1,193	491	323	1,599	299	40	69	1,738	184	85	2,007
Inflammation of brain	69	63	132	......	58	56	18	109	20	1	2	101	21	10	132
Apoplexy	148	122	268	2	45	80	145	98	124	17	31	228	28	14	270
Softening of brain	23	8	31	......	14	16	1	6	22	2	1	29	2	......	31
Hydrocephalus, not acute	3	5	8	......	8	......	......	8	......	......	......	8	......	......	8
Hemiplegia	20	17	37	......	4	17	16	9	15	6	7	31	4	2	37
Paralysis agitans	......	5	5	......	1	1	3	3	1	......	1	5	......	......	5
General paralysis of insane	3	2	5	......	......	1	4	3	2	......	......	4	......	1	5
Paraplegia	6	......	5	1	......	2	4	2	2	......	2	4	1	1	6
Chorea	2	......	2	......	2	......	......	2	......	......	......	2	......	......	2
Epilepsy	12	7	19	......	2	11	6	15	4	......	......	16	2	1	19
Convulsions	704	510	1,203	11	949	238	27	1,180	29	1	4	1,077	94	43	1,214

Trismus nascentium	39	32	71	......	71	......	......	71	......	......	......	64	5	2	71
Tetanus	27	17	43	1	33	8	3	40	2	2	......	36	6	2	44
Diseases of spinal cord	14	5	19	......	....	10	9	12	7	......	......	17	1	1	19
Other diseases, nervous system	76	68	142	2	6	51	87	41	71	11	21	116	20	8	144
C.—CIRCULATORY SYSTEM	346	289	626	9	47	228	360	197	308	59	71	558	54	23	635
Endocaritis	14	11	25	......	4	4	17	10	11	2	2	23	1	1	25
Pericarditis	18	8	26	......	2	11	13	8	14	2	2	25	1	....	26
Hypertrophy of heart	8	4	12	......	1	4	7	4	6	1	1	12	....	....	12
Angina pectoris	1	2	3	......	1	......	2	......	2	......	1	1	1	1	3
Valve disease of heart	90	78	166	2	6	59	103	49	89	17	13	149	14	5	168
Syncope	......	3	2	1	1	1	1	......	1	......	2	3	....	....	3
Aneurism	6	......	6	......	......	3	3	1	4	1	......	6	....	....	6
Senile gangrene	1	2	3	......	......	1	2	1	1	1	......	3	....	....	3
Embolism	22	18	40	......	5	19	16	8	13	10	9	38	2	....	40
Phlebitis	1	2	3	......	......	1	2	1	1	1	......	3	....	....	3
Varicose veins	1	1	2	......	......	......	2	......	2	......	......	1	....	1	2
Other diseases, circulatory system	184	160	338	6	27	125	192	115	164	24	41	294	35	15	344
D—RESPIRATORY SYSTEM	1,472	1,157	2,597	32	1,150	925	554	2,019	452	55	100	2,274	234	121	2,629
Laryngitis	15	10	25	......	13	9	3	21	4	......	......	22	2	1	25
Croup	263	230	491	2	213	269	11	489	4	......	......	418	53	22	493
Other diseases, larynx and trachea	1	1	2	......	......	......	2	......	1	1	......	2	....	....	2
Emphysema	7	2	9	......	......	1	8	1	4	3	1	9	....	....	9
Asthma	19	15	34	......	2	10	22	10	18	2	4	31	2	1	34
Bronchitis	477	383	850	10	493	249	118	727	84	12	37	762	63	35	860
Pneumonia	617	461	1,061	17	420	333	325	720	270	34	54	927	96	55	1,078
Typhoid pneumonia	46	46	89	3	8	41	43	41	46	2	3	74	14	4	92
Pleurisy	11	3	14	......	1	6	7	4	7	......	3	12	1	1	14
Other diseases, respiratory system	16	6	22	......	......	7	15	6	14	1	1	17	3	2	22
E—DIGESTIVE SYSTEM	827	667	1,483	11	752	435	307	1,081	319	35	59	1,298	131	65	1,494
Stomatitis	5	3	8	......	3	2	3	4	4	......	......	7	....	1	8
Dentition	30	24	54	......	35	19	......	54	......	......	......	42	7	5	54
Sore throat	6	4	10	......	3	4	3	9	1	......	......	8	1	1	10
Dyspepsia	4	2	6	......	4	2	......	5	1	......	......	4	1	1	6
Hematemesis	3	2	5	......	2	......	3	2	3	......	......	4	....	1	5
Melana	......	3	3	......	2	1	......	2	1	......	......	2	1	....	3
Disease of stomach	65	56	119	2	49	34	38	67	39	6	9	103	13	5	121
Enteritis	207	175	378	4	264	78	40	341	30	2	9	349	22	11	382
Ulceration of intestines	11	6	17	......	2	10	5	9	7	1	......	15	1	1	17
Ileus	3	1	4	......	1	......	3	1	3	......	......	3	1	....	4
Stricture and strangulation of intestines	5	2	7	......	......	2	5	4	2	......	1	7	....	....	7
Intussusception	13	4	17	......	7	4	6	11	5	1	......	12	4	1	17
Hernia	12	3	15	......	4	3	8	5	7	......	3	10	3	2	15
Fistula	2	1	3	......	1	1	1	2	1	......	......	2	1	....	3

Table V.—Continued.

CAUSES OF DEATH.	SEX.		COLOR.		NATIVITY.			SOCIAL CONDITION.				LOCALITY.			Totals ....
	Male........	Female.......	White........	Colored.......	Illinois.......	United States.	Foreign.......	Single........	Married.......	Widower	Widow.......	Cities or towns over 5,000 pop.	Towns under 5,000, over 500 population...	Towns or villages under 500 pop. or in country......	
Peritonitis	120	138	255	3	52	119	87	144	93	10	11	216	29	13	258
Ascites	4	2	6	.....	.....	3	3	1	4	1	.....	6	.....	.....	6
Jaundice	19	21	40	.....	27	5	8	17	12	5	6	38	1	1	40
Cirrhosis	36	12	48	.....	2	14	32	6	38	3	1	42	4	2	48
Other diseases of liver	38	38	74	2	26	32	18	34	32	3	7	67	5	4	76
Other diseases, digestive system	244	170	414	.....	268	102	44	363	36	3	12	361	37	16	414
F.—LYMPHATIC SYSTEM	4	6	9	1	1	4	5	3	7	.....	.....	8	1	1	10
Disease of lymphatics	1	.....	1	.....	1	.....	.....	1	.....	.....	.....	1	.....	.....	1
Disease of spleen	3	6	8	1	.....	4	5	2	7	.....	.....	7	1	1	9
G.—GLAND-LIKE ORGANS OF UNCERTAIN USE	4	1	5	.....	1	3	1	3	2	.....	.....	5	.....	.....	5
Bronchocele	2	.....	2	.....	.....	2	.....	1	1	.....	.....	2	.....	.....	2
Addison's disease	2	1	3	.....	1	1	1	2	1	.....	.....	3	.....	.....	3
H.—URINARY SYSTEM	235	150	378	7	44	165	176	154	180	18	33	351	21	13	385
Nephritis	79	60	136	3	25	64	50	77	46	3	13	133	4	2	139
Bright's disease	113	62	172	3	10	77	88	51	99	10	15	157	12	6	175
Uremia	17	19	35	1	4	15	17	12	20	1	3	32	3	1	36
Suppression of urine	2	.....	2	.....	1	.....	1	1	1	.....	.....	1	.....	1	2
Calculus	4	2	6	.....	1	2	3	2	2	.....	2	5	.....	1	6
Hematuria	.....	1	1	.....	1	.....	.....	1	.....	.....	.....	.....	.....	1	1
Disease of bladder and prostate	1	.....	1	.....	1	.....	.....	1	.....	.....	.....	1	.....	.....	1
Other diseases, urinary system	19	6	25	.....	1	7	17	9	12	4	.....	22	2	1	25

I.—REPRODUCTIVE ORGANS	5	78	81	2	5	25	53	23	56	1	3	68	10	5	83
a. Organs of Generation	5	35	39	1	4	13	23	16	20	1	3	37	1	2	40
Ovarian disease	......	8	7	1	......	2	6	1	5	......	2	7	1	......	8
Disease of uterus and vagina	......	15	15	......	......	6	9	8	7	......	......	14	......	1	15
Disorders of menstruation	......	9	9	......	1	5	3	4	4	......	1	9	......	......	9
Pelvic abscess	......	2	2	......	......	......	2	......	2	......	......	1	......	1	2
Perineal abscess	1	1	2	......	1	......	1	1	......	1	......	2	......	......	2
Diseases or testes, penis, &c	4	......	4	......	2	......	2	2	2	......	......	4	......	......	4
b. Parturition	......	43	42	1	1	12	30	7	36	......	......	31	9	3	43
Abortion	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Miscarriage	......	4	4	......	......	1	3	1	3	......	......	4	......	......	4
Puerperal mania	......	4	4	......	......	1	3	1	3	......	......	1	2	1	4
Puerperal convulsions	......	6	5	1	......	2	4	2	4	......	......	6	......	......	6
Placenta prævia	......	4	4	......	......	......	4	......	4	......	......	3	1	......	4
Flooding	......	7	7	......	......	2	5	......	7	......	......	7	......	......	7
Phlegmasia dolens	......	3	3	......	......	2	1	1	2	......	......	2	1	......	3
Other complications of childbirth	......	15	15	......	1	4	10	2	13	......	......	8	5	2	15
K.—LOCOMOTOR SYSTEM	10	9	18	1	3	8	8	11	6	1	1	17	1	1	19
Caries and necrosis	4	3	6	1	2	3	2	5	2	......	......	6	1	......	7
Arthritis	3	2	5	......	......	2	3	2	1	1	1	5	......	......	5
Ostitis	1	2	3	......	1	1	1	2	1	......	......	3	......	......	3
Other diseases, locomotor system	2	2	4	......	......	2	2	2	2	......	......	3	......	1	4
L.—INTEGUMENTARY SYSTEM	9	9	18	......	6	3	9	8	8	1	1	17	......	1	18
Carbuncle	4	2	6	......	1	1	4	1	4	1	......	6	......	......	6
Lupus	1	1	2	......	......	1	1	......	2	......	......	2	......	......	2
Ulcer	2	3	5	......	1	1	3	3	1	......	1	4	......	1	5
Eczema	1	2	3	......	3	......	......	3	......	......	......	3	......	......	3
Other diseases, integumentary system	1	1	2	......	1	......	1	1	1	......	......	2	......	......	2
VII.—Violence	680	135	812	3	47	324	444	438	340	19	18	724	63	28	815
Railroad accident	153	16	169	......	10	77	82	101	61	4	3	143	18	8	169
Other accident	411	94	502	3	35	209	261	285	193	13	14	449	39	17	505
Homicide	8	2	10	......	1	5	4	4	5	1	......	10	......	......	10
Suicide	107	23	130	......	1	33	96	47	81	1	1	121	6	3	130
Execution	1	......	1	......	......	......	1	1	......	......	......	1	......	......	1

Table V.—Continued.

CAUSES OF DEATH.	SEX.		COLOR.		NATIVITY.			SOCIAL CONDITION.				LOCALITY.			Totals...............
	Male..........	Female........	White.........	Colored.......	Illinois.	United States.	Foreign.......	Single	Married.......	Widower......	Widow........	Cities or towns over 5,000 pop.	Towns under 5,000 over 500 population...	Towns or villages under 500 pop. or in country.....	
VIII.—Otherwise Unclassified., ...	645	513	1,139	19	662	217	279	845	226	30	57	993	116	49	1,158
Dropsy..	48	20	67	1	8	29	31	31	27	3	7	59	6	3	68
Debility...	25	25	50	......	31	7	12	38	8	1	3	47	2	1	50
Atrophy from inanition..............................	248	207	449	6	418	23	14	440	9	1	5	380	55	20	455
Mortification..	18	7	25	......	1	10	14	9	11	4	1	23	1	1	25
Tumor..	11	14	24	1	3	7	15	13	7	3	2	23	1	1	25
Abscess..	24	25	48	1	8	22	19	27	21	1	......	42	5	2	49
Hemorrhage	14	6	19	1	5	5	10	9	8	1	2	19	1	....	20
Sunstroke	4	1	5	......	......	......	5	1	4	......	......	3	1	1	5
Sudden—not stated..................................	3	2	5	......	1	2	2	4	1	......	......	5	....	....	5
Ill-defined	196	173	361	8	150	94	125	217	104	15	33	321	34	14	369
Unknown..	54	33	86	1	37	18	32	56	26	1	4	17	10	6	87

TABLE VI.—*Deaths from Specified Causes (classified) reported in Cook County during the year 1886:* MONTHS.

CAUSES OF DEATH.	MONTHS.												Totals
	January	February	March	April	May	June	July	August	September	October	November	December	
Total deaths from all causes	1,300	1,197	1,537	1,536	1,280	1.374	1,771	1,702	1,442	1,295	1,297	1,418	17,149
I.—Specific Febrile or Zymotic Diseases	344	273	293	323	276	400	755	671	472	405	331	339	4,882
A.—MIASMATIC DISEASES	290	208	225	244	213	261	240	311	259	315	293	280	3,139
Small-pox	3	......	......	......	......	......	......	......	......	......	......	......	3
Chicken-pox	......	......	......	......	......	......	......	......	......	......	......	3	3
Measles	13	4	5	7	8	20	26	17	8	8	11	31	158
Scarlet fever	29	37	24	23	28	29	13	41	15	18	16	27	300
Typhus fever	3	1	3	5	3	3	2	1	2	1	3	2	29
Influenza	......	......	......	......	1	......	1	......	......	......	......	......	2
Mumps	......	......	......	......	1	......	1	2	......	......	......	......	4
Diphtheria	113	53	65	71	80	105	82	122	91	144	143	133	1,202
Cerebro-spinal fever	76	61	78	75	41	54	53	41	46	48	43	47	663
Whooping-cough	10	13	8	12	15	7	12	18	20	6	7	3	131
Continued fever	5	7	4	2	2	2	......	1	2	5	2	2	34
Enteric fever	38	32	38	49	34	41	50	68	75	85	68	32	610
B.—DIARRHETIC DISEASES	19	19	20	35	27	116	482	322	181	57	14	23	1,315
Cholera infantum	5	5	7	14	17	93	422	271	147	33	9	8	1,031
Cholera morbus	2	......	1	2	1	3	14	7	5	1	......	3	39
"Winter cholera"	1	......	1	......	......	......	......	......	......	......	......	1	3
Diarrhea	7	10	7	12	7	13	33	32	19	18	5	6	169
Dysentery	4	4	4	7	2	7	13	12	10	5	......	5	73

Table VI.—Continued.

CAUSES OF DEATH.	MONTHS.												Totals
	January	February	March	April	May	June	July	August	September	October	November	December	
C.—MALARIAL DISEASES	8	8	13	9	5	1	5	7	4	8	4	6	78
Intermittent fever	1	2	1	1	1	......	1	3	......	1	1	1	13
Remittent fever	4	2	6	7	3	1	2	2	3	4	3	3	40
Congestive fever	2	2	2	......	......	......	2	2	1	2	......	......	13
Other malarial diseases	1	2	4	1	1	......	......	......	......	1	......	2	12
E.—ZOÖGENOUS DISEASES	......	......	1	2	......	......	1	4	1	3	5	4	21
Hydrophobia	......	......	......	......	......	......	......	......	......	1	1	......	2
Other zoögenous diseases	......	......	1	2	......	......	1	4	2	2	3	4	19
E.—VENEREAL DISEASES	2	3	1	2	3	3	3	3	4	......	......	2	26
Syphillis	2	3	1	2	3	3	3	3	4	......	......	2	26
F.—SEPTIC DISEASES	25	35	33	31	28	19	24	24	23	22	15	24	303
Erysipelas	9	10	11	7	9	4	4	5	2	8	4	7	80
Pyemia	1	2	2	7	2	1	4	1	2	2	1	......	25
Septicemia	6	8	9	8	7	12	6	10	13	9	5	7	100
Puerperal fever	9	15	11	9	10	2	10	8	6	3	5	10	98
II.—Parasitic Diseases	4	1	......	2	......	2	1	......	......	2	2	......	14
Thrush	3	1	......	2	......	2	1	......	......	2	2	......	13
Trichiniasis	1	......	......	......	......	......	......	......	......	......	......	......	1

III.—Dietic Diseases	5	2	3	8	6	4	6	5	8	5	11	7	70
Starvation	......	......	1	......	......	......	......	......	1	......	......	......	2
Scurvy	1	......	......	......	1	......	......	......	......	......	......	......	2
Alcoholism	2	......	2	5	5	3	3	4	5	2	11	7	49
Delirium tremens	2	2	......	3	......	1	3	1	2	3	......	......	17
IV.—Constitutional Diseases	180	152	224	218	204	204	187	212	201	176	195	202	2,355
Rheumatic fever	3	3	3	3	......	1	2	......	2	1	......	1	19
Rheumatic heart	2	1	2	1	3	4	1	2	3	2	3	4	28
Rheumatism	5	3	5	2	4	4	4	5	1	2	2	5	42
Rickets	......	1	......	......	1	......	2	......	......	......	3	1	8
Cancer	21	17	26	37	27	33	27	35	37	26	25	30	341
Tabes mesenterica	12	12	14	12	15	16	25	28	30	20	16	10	210
Tubercular meningitis	6	5	6	6	8	7	8	19	7	5	6	11	94
Phthisis	122	102	157	144	137	132	107	112	109	113	130	130	1,495
Scrofula	3	3	4	2	3	4	3	4	2	1	2	4	35
Purpura	......	1	1	......	1	......	......	......	......	......	......	......	3
Anemia	3	2	2	8	3	2	5	6	10	6	6	3	56
Diabetes mellitus	2	2	4	2	2	1	3	1	......	......	2	2	21
Other constitutional diseases	1	......	......	1	......	......	...	......	......	......	......	1	3
V.—Developmental Diseases	47	46	61	47	50	61	57	32	40	32	47	50	570
Premature birth	18	21	27	22	28	18	29	16	16	15	13	19	242
Atelectasis	......	2	1	4	3	2	......	1	2	1	......	1	17
Cyanosis	2	......	......	1	3	3	1	1	2	......	......	1	14
Spina bifida	2	1	......	......	......	1	2	1	2	......	3	1	13
Other congenital defects	2	1	1	1	1	......	......	......	......	......	1	1	8
Umbilical hemorrhage	......	1	1	......	......	......	......	......	......	......	......	......	2
Old age	23	20	31	19	15	37	25	13	18	16	30	27	274
VI.—Local Diseases	590	577	787	783	579	525	574	602	531	516	541	680	7,285
A.—NERVOUS SYSTEM	163	178	208	190	156	164	165	181	166	141	138	157	2,007
Inflammation of brain	11	10	16	13	10	4	6	19	11	5	12	15	132
Apoplexy	20	27	23	28	28	22	11	23	22	21	16	29	270
Softening of brain	4	3	2	2	5	4	2	4	......	......	2	3	31
Hydrocephalus, not acute	2	1	2	......	2	......	......	......	1	......	......	......	8
Hemiplegia	1	6	4	3	3	3	6	1	3	4	1	2	37
Paralysis agitans	......	1	......	1	......	......	......	1	1	......	1	......	5
General paralysis of insane	1	......	......	......	1	......	......	1	1	......	......	1	5
Paraplegia	2	......	......	1	1	1	......	......	......	1	......	......	6
Chorea	1	......	......	1	......	......	......	......	......	......	......	......	2
Epilepsy	1	2	2	1	3	2	2	......	3	1	......	2	19
Convulsions	103	102	137	119	80	102	113	104	104	81	81	88	1,214

Table VI.—Continued.

CAUSES OF DEATH.	MONTHS.												Totals
	January	February	March	April	May	June	July	August	September	October	November	December	
Trismus nascentium	5	4	6	4	5	5	5	9	6	7	7	8	71
Tetanus	2	3	1	3	2	7	7	9	5	3	1	1	44
Diseases of spinal cord	2	3	......	2	2	......	3	......	1	1	3	2	19
Other diseases, nervous system	8	16	15	12	14	14	10	10	8	17	14	6	144
C.—CIRCULATORY SYSTEM	52	44	61	59	57	38	44	58	39	57	46	80	635
Endocarditis	2	4	3	7	4	......	1	......	1	1	......	2	25
Pericarditis	1	2	5	6	5	......	1	2	......	2	1	1	26
Hypertrophy of heart	1	2	1	......	1	......	1	......	......	2	3	1	12
Angina pectoris	......	......	1	......	......	......	......	1	1	......	......	......	3
Valve-disease of heart	14	10	17	18	12	8	15	15	11	17	13	18	168
Syncope	2	1	......	......	......	......	......	......	......	......	......	......	3
Aneurism	......	......	......	1	......	......	......	1	1	......	1	2	6
Senile gangrene	1	......	......	1	...	......	......	......	......	......	......	1	3
Embolism	......	1	2	2	1	4	5	7	4	8	5	1	40
Phlebitis	......	......	......	......	......	1	......	......	......	......	1	1	3
Varicose veins	......	......	......	......	......	......	1	......	......	......	......	1	2
Other diseases, circulatory system	31	24	32	24	34	25	20	32	21	27	22	52	344
D.—RESPIRATORY SYSTEM	228	234	351	374	244	145	119	117	124	169	243	281	2,629
Laryngitis	1	1	1	3	2	1	3	2	1	3	6	1	25
Croup	63	31	46	35	30	14	15	20	32	63	89	55	493
Other diseases, larynx and trachea	......	......	......	......	......	1	......	......	1	......	......	......	2
Emphysema	......	......	2	1	......	2	1	......	1	1	......	1	9
Asthma	1	2	4	4	4	3	2	3	2	1	3	5	34
Bronchitis	70	82	135	149	84	61	44	32	35	40	56	72	860
Pneumonia	74	100	143	169	113	54	48	55	46	58	86	132	1,078
Typhoid pneumonia	16	15	17	8	7	4	3	4	3	2	2	11	92
Pleurisy	1	1	1	2	2	1	1	1	2	......	1	1	14
Other diseases, respiratory system	2	2	2	3	2	4	2	......	1	1	......	3	22

E.—DIGESTIVE SYSTEM	101	89	127	116	85	136	198	198	150	117	76	101	1,494
Stomatitis	2	......	......	2	......	1	......	2	......	......	......	1	8
Dentition	6	3	13	6	5	4	......	3	3	7	1	3	54
Sore throat	2	1	......	......	1	1	......	2	......	1	......	2	10
Dyspepsia	2	......	1	......	......	1	1	......	......	......	......	1	6
Hematemesis	......	......	......	1	......	1	2	1	......	......	......	......	5
Melana	1	......	......	1	......	1	......	......	......	......	......	......	3
Disease of stomach	12	5	17	11	7	10	10	11	8	10	7	13	121
Enteritis	17	15	29	24	17	44	59	64	45	39	11	18	382
Ulceration of intestines	2	......	1	2	1	1	1	3	2	1	......	3	17
Ileus	......	1	......	1	1	......	......	......	......	......	1	......	4
Stricture and strangulation of intestines	......	1	2	1	......	......	......	......	......	......	1	2	7
Intussusception	......	......	2	1	2	1	3	1	......	2	4	1	17
Hernia	1	1	1	1	2	......	......	1	1	4	1	2	15
Fistula	......	1	......	......	1	1	......	......	......	......	......	......	3
Peritonitis	21	23	22	24	16	18	25	25	20	22	20	22	258
Ascites	......	1	......	1	......	......	1	......	1	......	2	......	6
Jaundice	4	2	3	1	2	6	5	5	2	5	3	2	40
Cirrhosis	5	6	3	8	2	5	3	......	8	......	2	6	48
Other diseases of liver	6	12	5	7	4	11	5	4	9	4	5	4	76
Other diseases, digestive system	20	17	28	24	24	30	83	76	51	22	18	21	414
F.—LYMPHATIC SYSTEM	1	......	1	......	1	......	1	1	1	1	......	3	10
Disease of lymphatics	......	......	1	......	......	......	......	......	......	......	......	......	1
Disease of spleen	1	......	......	......	1	......	1	1	1	1	......	3	9
G.—GLAND-LIKE ORGANS OF UNCERTAIN USE	......	1	2	1	......	......	......	1	......	......	......	......	5
Bronchocele	......	......	1	1	......	......	......	......	......	......	......	......	2
Addison's disease	......	1	1	......	......	......	......	1	......	......	......	......	3
H.—URINARY SYSTEM	29	25	30	35	32	28	38	36	38	22	30	42	385
Nephritis	12	9	13	13	11	9	13	13	13	5	14	14	139
Bright's disease	9	11	12	18	18	10	19	18	16	13	9	22	175
Uremia	5	2	2	3	1	6	2	3	1	3	4	4	36
Suppression of urine	......	......	......	......	......	......	1	......	......	1	......	......	2
Calculus	......	2	1	......	......	......	2	......	1	......	......	......	6
Hematuria	......	......	......	......	......	......	......	......	1	......	......	......	1
Diseases of bladder and prostate	......	1	......	......	......	......	......	......	......	......	......	......	1
Other diseases, urinary system	3	......	2	1	2	3	1	2	6	......	3	2	25

Table VI.—Continued.

CAUSES OF DEATH.	MONTHS.												Totals
	January	February	March	April	May	June	July	August	September	October	November	December	
I.—REPRODUCTIVE ORGANS	12	3	6	6	3	11	6	6	10	6	6	8	83
a. Organs of Generation	3	3	3	5	1	5	3	3	4	2	3	5	40
Ovarian disease	.....	.....	1	1	.....	1	.....	2	.....	2	.....	1	8
Disease of uterus and vagina	1		2	2	.	1	2	.....	3	.....	1	2	15
Disorders of menstruation	1	.....	.....	.....	.....	2	1	1	1	.....	1	2	9
Pelvic abscess	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	2
Perineal abscess	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	2
Disease of testes, penis etc	1	2	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	4
b. Parturition	9	.....	3	1	2	6	3	3	6	4	3	3	43
Miscarriage	1	.....	.....	.....	1	1	.....	1	.....	.....	.....	.....	4
Puerperal mania	1	.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	4
Puerperal convulsions	1	.....	.....	.....	.....	.....	1	1	1	.....	.....	2	6
Placenta prævia	.....	.....	1	.....	.....	1	.....	.....	1	1	.....	.....	4
Flooding	1	.....	.....	.....	.....	1	1	.....	2	1	.....	1	7
Phlegmasia dolens	2	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	3
Other complications of childbirth	3	.....	.....	.....	.....	3	1	1	2	2	3	.....	15
K.—LOCOMOTOR SYSTEM	3	2	1	1	.....	1	2	2	2	2	.....	3	19
Caries and necrosis	1	1	.....	1	.....	.....	1	.....	.....	1	.....	2	7
Arthritis	1	1	.....	.....	.....	1	1	.....	1	.....	.....	.....	5
Ostitis	.....	.....	1	.....	.....	.....	.....	1	.....	1	.....	.....	3
Other diseases, locomotor system	1	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1	4
L.—INTEGUMENTARY SYSTEM	1	1	.....	1	1	2	1	2	1	1	2	5	18
Carbuncle	.....	.....	.....	.....	.....	1	.....	1	1	1	1	1	6
Lupus	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	2

Ulcer	......	......	......	1	......	1	......	1	......	......	......	2	5
Eczema	1	......	......	......	......	......	......	......	......	......	1	1	3
Other diseases, integumentary system	......	......	......	......	1	......	......	......	......	......	......	1	2
VII.—Violence	35	40	50	68	73	83	75	88	97	68	76	62	815
Railroad accident	5	5	6	8	9	10	13	24	26	19	30	14	169
Other accident	23	30	34	46	44	60	41	50	59	41	36	41	505
Homicide	......	......	......	......	4	......	1	2	1	......	1	1	10
Suicide	6	5	10	14	16	13	20	12	11	8	9	6	130
Execution	1	......	......	......	......	......	......	......	......	......	......	......	1
VIII.—Otherwise Unclassified	95	106	119	87	92	95	116	92	93	91	94	78	1,158
Dropsy	11	5	9	8	8	3	6	2	3	3	8	2	68
Debility	2	4	6	2	4	5	9	6	4	2	2	4	50
Atrophy from inanition	40	40	58	30	30	43	47	34	49	27	32	25	455
Mortification	2	2	1	2	2	2	......	4	1	4	2	3	25
Tumor	......	4	1	4	2	......	3	1	1	5	3	1	25
Abscess	1	3	2	2	4	4	7	4	6	5	6	5	49
Hemorrhage	2	2	1	......	1	2	......	2	3	3	3	1	20
Sun-stroke	......	......	......	......	......	2	1	2	......	......	......	......	5
Sudden—not stated	......	1	1	1	......	1	......	......	......	......	......	1	5
Ill-defined	32	38	34	31	34	29	36	32	22	29	32	20	369
Unknown	5	7	6	7	7	4	7	5	4	13	6	16	87

TABLE VI.—*Decedents in Illinois at Ages over 90 Years.*

Ages.			Names	Sex.	Birthplace.	Data of Death.			Certifying Physician.
Years.	Mo's..	Days..				Date.	Place.	Cause.	
95	5	20	Akers, Peter	M.	Lynchburg, Va	Feb. 21, 1886	Jacksonville	Acute pneumonia	T. J. Pitner
97	4	....	Adams, Elizabeth	F.		Feb. 23, 1886	Southport	Old age	J. J. Lobaugh
92	2	10	Askins, Patrick	M.	Ireland	May 14, 1886	Belvidere	Prostatic abscess	Chas. Scott
90	....	10	Baker, George	M.	Kentucky	Aug. 23, 1886	Rushville	Prostatitis	J. N. Speed
92	....	....	Berg, Margaret	F.	Germany	April 27, 1886	Chicago	Marasmus	Paul Kreye
99	4	21	Brinkley, Granny	F.	South Carolina	Oct. 2, 1886	Claremont	Old age	N. B. Allen
93	....	....	Canda, Florimund	M.	France	Feb. 9, 1886	Ravenswood	Old age	H. Parsons
95	....	....	Curd, Deida	F.	Virginia	Oct. 1, 1886	Chicago	Paralysis	L. Kirkpatrick
92	9	...	Cadwell, S. W	M.	America	Feb. 24, 1886	Hyde Park	Old age [a]	A. G. Paine
90	....	....	Connolly, Michael	M.	Ireland	Feb. 8, 1886	Chicago	General debility	D. W. Nolan
92	1	....	Chapin, Eliza	F.	America	April 4, 1886	Chicago	Old age	R. N. Tooker
96	7	10	Dorsey, Samuel	M.	Maryland	April 22, 1886	Bennington	Old age [b]	W. O. Ensign
92	....	....	Evans, Johanna	F.	Ireland	Aug. 18, 1886	Lake	Old age	C. P. Caldwell
91	1	22	Fletcher, Ann	F.	New Hampshire	May 16, 1886	Bunker Hill	Fracture of neck of femur	E. S. Milton
92	....	....	Fitzgerald, Mary	F.	Ireland	May 10, 1886	Cook County Infirmary	Old age	A. Thuemmler
93	....	....	Glover, Ruhamale	F.	Massachusetts	Jan. 21, 1886	Jacksonville	Old age [c]	W. H. H. King
93	6	4	Gregory, William H	M.	Virginia	Nov. 26, 1886	Butlersville	Old age [d]	Wm. Powell
96	....	....	Gleason, Michael	M.	Ireland	April 5, 1886	Woodford Co. almsh'se	Old age [e]	W. A. Mansfield
95	....	....	Green, Sarah V	F.	America	Feb. 4, 1886	Chicago	Old age	N. S. Davis
94	5	....	Houghton, Thomas	M.	Massachusetts	Oct. 5, 1886	Gridley	Pulmonary hemorrhage	J. A. Taylor
91	....	....	Hanschen, Mary	F.	Germany	Nov. 18, 1886	Christian county	Old age	H. S. Strain
97	5	13	Hart, Jane	F.	America	April 28, 1886	Chicago	Senility	L. St. John
96	....	....	Jordan, Catherine	F.	Virginia	Oct. 12, 1885 [f]	Garden Plain	Old age	J. M. Eaton
97	....	....	Knealey, Elizabeth	F.	Ireland	July 25, 1886	Cook County Infirmary	Senile debility	A. Thuemmler
92	8	....	Leech, Mary	F.	Ireland	Nov. 15, 1886	Florid	Old age	J. F. O'Neal
93	10	10	Lathrop, Susan E	F.	America	April 10, 1886	Chicago	Old age [g]	A. H. Foster
99	11	....	Locket, Fannie	F.	America	April 29, 1886	Chicago	Old age	C. H. McCallister
92	11	17	Miller, Isabella	F.	Virginia	Dec. 29, 1886	Bloomington	Old age	J. M. Miller
98	2	10	Moore, David	M.	New Jersey	April 1, 1886	Wenona	Old age	F. Potts
100	....	....	McLain, Mrs	F.	Ireland	April 7, 1886	Morris	Old age	T. A. & A. F. Hand
90	2	4	Miller, Catherine	F.	Maryland	Feb. 26, 1886	Georgetown	Old age	J. Haller
93	4	1	Mick, Elizabeth W	F.	America	Oct. 22, 1886	Hyde Park	Old age	W. S. Jonson
95	....	....	Morrasey, Hannah	F.	Ireland	Nov. 23, 1886	Lake	Old age	J. H. Eskridge
109	....	....	Murphey, Mary	F.	Ireland	Aug. 19, 1886	Chicago	Old age	A. D. Finucane
95	....	....	Murphey, Bridget	F.	Ireland	Dec. 13, 1886	Chicago	Old age	D. Collins
93	....	....	Nuirgarth, Margaret	F.	Illinois	June 8, 1886	Jacksonville	Insanity	H. F. Carriel
90	10	16	Nesmith, Thomas J	M.	Washington, D. C	Sept. 22, 1886	Cottage Hill	Old age [h]	J. F. O'Neal
99	....	....	O'Meara, Mary	F.	Ireland	Jan. 27, 1886	Hegewisch	Old age	J. H. McDonald
98	....	....	O'Connor, Margaret	F.	Ireland	Nov. 6, 1886	Lake View	Paralysis	J. L. Irwin
103	....	....	O'Brien, Mary	F.	Ireland	Mar. 16, 1886	Cook County Infirmary	Old age [i]	A. Tuemmler

100	....	....	Page, Nancy	F.	America	July	12, 1886	Chicago	Old age *k*	S. P. Hedges
90	....	1	Ragan, Lydia	F.	Virginia	Sept.	14, 1886	Newcomb	Old age	J. H. Gardner
92	....	....	Reynolds, N.	F.	America	Nov.	28, 1886	Chicago	Old age	F. A. Emmons
93	....	....	Sommers, Jacob	M.	Germany	April	11, 2886	Cook County Infirmary	Old age *l*	A. Thuemmler
91	....	....	Schodenler, Jacob	M.	Germany	Feb.	28, 1886	Cook County Infirmary	Old age	A. Thuemmler
90	...	...	Shehan, Johanna	F.	Ireland	July	11, 1886	Chicago	Old age *m*	M. W. Borland
93	11	19	Spencer, Sylvia B.	F.	New Hampshire	Dec.	15, 1885 *n*	Waukegan	Old age	J. M. G. Carter
90	....	....	Wallace, Julia	F.	England	July	6, 1886	Chicago	Old age	F. W. Fitzgerald
100	....	....	Weeks, Louisa	F.	America	Sept.	30, 1886	Chicago	Apoplexy	J. J. Alderson
90	....	....	Yestzke, Justina	F.	Poland	Jan.	21, 1886	Chicago		A. Lange

---

a Complication, bronchitis. *b* Complication, paralysis. *c* Conplication, asthma. *d* Complication, axe wound in foot. *e* Complication, rupture.
f Not reported until February 1886. *g* Complication, inflammatory rheumatism. *h* Complication, senile gangrene. *i* Complication, heart disease.
k Complication, rheumatism. *l* Complication, dementia. *m* Complication, hernia. *n* Not reported until February 1886.

CORONER'S INQUESTS.

Held in the State of Illinois, for the year ended December 31, 1886, compiled by Alexander Woods, M. D., Coroner of St. Clair county, Freeburg, Illinois:

Number of bodies over whom inquests were held.... 2,345

Sex.		Color.	
Male	1,914	White	2,289
Female	4 28	Colored	56
Not ascertained	3	Indian	1

SOCIAL STATE.

Single	1,200
Married	962
Unknown	149
Not reported	34

Age.

Under 5 years	269	60 to 70 "	167
5 to 10 years	69	70 to 80 "	78
10 to 20 "	223	80 to 90 "	18
20 to 30 "	378	90 to 100 "	
30 to 40 "	358	At 103 "	1
40 to 50 "	307	Unknown	151
50 to 60 "	235	Not reported	91

No. Each Month.

January	102	August	212
February	144	September	207
March	170	October	190
April	221	November	206
May	238	December	183
June	232	Month not given	3
July	237		

Nativity.

United States	1,132
Germany	431
Ireland	265
Unknown	135
England	79
Scandinavian	52
Canada	37
Not ascertained	35
Bohemia	34
Austria	27
Scotland	26
Poland	19
Sweden	19
Italy	13
France	11
Holland	10
Switzerland	7
Wales	3
Denmark	2
Russia	2
Norway	2
Belgium	1
Greece	1
Finland	1
Portugal	1
Total	2,345

Occupations.

Laborer	523
No occupation	491
Housekeeper	209
Farmer	187
Unknown	176
Railroad employes	91
Mechanics	56
Carpenters	50
Clerks	50
Other occupations	44
Painters	41
Teamsters	39
Coal miners	38
Merchants	36
Servants	36
Not reported	32
Saloonkeepers	24
Tailors	21
Butchers	16
Police officers	16
Tramps	13
Agents	13
Engineers	12
Peddlars	11
Blacksmiths	10
Physicians	10
Sailors	9
Shoemakers	9
Druggists	7
Sporting women	7
Students	7
Expressmen	6
Printers	6
Paupers	5
Musicians	5
Bakers	5
Barbers	4
Coopers	4
Travelingmen	4
Dressmakers	4
Masons	4
Cigarmakers	3
Artists	3
Tinners	3
Telegraph operators	3
Lawyers	2
Total	2,345

Cause of Death.

Railroad accident	374
Suicide	335
Drowned (accidental)	264
Heart disease	174
Homicide	118
Natural causes	90
Asphyxiated	71
Convulsions (Infantile)	71
Premature birth	58
Intemperance	52
Falls—unclassified	52
Apoplexy	50
Gun shot wounds (accidental)	47
Run over by vehicles	45
Falling from buildings	44
Burns	43
Diseases, unclassified	41
Infanticide	38
Accidents unclassified	34
Unknown	30
Exposure	27
Falling from vehicles	24
Poison (accidental)	24
Explosions	23
Coal mine accidents	23
Machinery accidents	22
Elevator accidents	22
Cause not reported	22
Consumption	20
Street car accident	16
Asthma	15
Old age	13
Falling building	9
Sun-stroke	7
Abortion (criminal)	7
Lightning	6
Kicked by horse	6
Epilepsy	6
Haymarket riot (Chicago)	6
Shot by deputy sheriffs (East St. Louis)	6
Falling tree	4
Shot in self-defence	3
Shot by sheriff	1
Electricity (electric light wires)	1
Lynched by mob	1
Total	2,345

DATA CONCERNING SUICIDES.

Sex.		Race.	
Male	265	White	332
Female	70	Colored	3
Total	335	Total	335

Social State.

	Male.	Female.	Total.
Single	82	25	107
Married	144	38	182
Widowed	12	6	18
Unknown	27	1	28
	265	70	335

Ages.

	Male.	Female.	Total.
Under 20 years	11	15	26
20–30 "	52	20	72
30–40 "	39	11	50
40–50 "	49	6	55
50–60 "	44	6	50
60–70 "	29	5	34
70–80 "	4	2	6
80–90 "	1	....	1
Unknown	36	5	41
	265	70	335

Suicides. Nativities.

	Male.	Female.	Total.
United States	87	32	119
Germany	88	20	108
Ireland	20	4	24
England	9	3	12
Unknown	27	5	32
Sweden	6	1	7
Switzerland	1	....	1
Scotland	5	....	5
France	2	....	2
Norway	4	....	4
Denmark	2	....	2
Scandinavian	2	....	2
Holland	2	....	2
Bohemia	5	2	7
Russia	1	....	1
Italy	1	....	1
Austria	2	2	4
Hungary	1	....	1
Canada	....	1	1
	265	70	335

Suicides. Occupations.

Males.	
Farmers	48
Unknown	28
Laborers	67
Carpenters	10
Clerks	10
Merchants	10
Teamsters	5
Tailors	4
Saloonkeepers	4
Peddlers	4
Bartenders	4
Brokers	3
Railroad employes	3
Druggists	3
Butchers,	3
Barbers	2
Telegraph operators	2
Students	4
Sailors	2
Agents	2
Stonecutters	3
Jewelers	2
Masons	3
Printers	2
Bakers	2
Other occupations	35
	265

Females.	
Housekeepers	43
Servants	7
Sporting women	2
Dressmakers	2
Saleslady	1
Laundress	1
No occupation	14
	70

Suicides—Mode of Death—By Months.

Mode.	January	February	March	April	May	June	July	August	September	October	November	December	Total 1886	Total 1885
Poison	4	8	7	11	10	9	12	12	8	7	11	5	104	72
Shooting	8	3	6	10	11	6	6	10	11	8	5	3	87	105
Hanging	2	5	7	11	9	5	10	6	5	3	4	4	71	86
Drowning	....	1	2	6	4	8	5	2	3	2	2	1	36	42
Cutting throat	1	2	4	2	2	1	3	1	1	2	1	2	22	25
Throwing self on railroad	....	....	....	1	....	1	1	2	1	1	1	....	8	5
Stabbed wounds	....	....	....	1	....	....	1	....	....	....	1	....	3	2
Burned self	....	1	1	....	....	....	....	....	...	....	....	....	2	......
Jumping from window	....	....	....	....	....	....	....	....	1	....	....	....	1	3
Not stated	....	....	....	....	....	1	....	....	....	....	....	....	1	13
	15	20	27	42	36	31	38	33	30	23	25	15	335	353

Suicides—Mode, Months and Sex.

	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total.
Poison	4	....	4	4	4	3	8	3	7	3	5	4	8	4	9	3	5	3	5	2	7	4	2	3	104
Shooting	8	....	3	....	6	....	10	....	11	....	5	1	6	....	9	1	11	....	8	....	5	....	3	....	87
Hanging	2	....	4	1	6	1	8	3	9	....	4	1	9	1	6	....	5	....	3	....	3	1	3	1	71
Drowning	....	....	....	1	1	1	4	2	3	1	5	3	3	2	....	2	2	1	....	2	1	1	....	1	36
Cutting throat	1	....	2	....	2	2	2	....	2	....	1	....	3	....	1	....	1	....	2	....	1	....	2	....	22
Throwing self under railroad train	....	....	....	....	....	....	....	1	....	....	1	....	1	....	2	....	1	....	1	....	1	....	....	....	8
Stabbed wounds	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	3
Burned self	....	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2
Not stated	....	....	....	....	....	...	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1
Jumping from window	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1
	15	....	14	6	19	8	32	10	32	4	21	10	31	7	27	6	26	4	19	4	19	6	10	5	335

Kinds of Poison taken by Suicides.

	Males.	Females.	Total.
Morphine	15	8	23
Rough on Rats	13	9	22
Laudanum	5	4	9
Opium	7	1	8
Carbolic acid	6	1	7
Strychnine	5	2	7
Arsenic	2	4	6
Paris green	2	2	4
Chloroform	2	0	2
Corrosive sublimate	....	2	2
Aconite	2	....	2
Cyanide potash	....	1	1
Muriatic acid	....	1	1
Not stated	9	1	10
	68	36	104

Inquests by Counties in the State of Illinois for the Year Ended December 31, 1886.

County.	Coroner.	P. O. Address.	No. of Inquests	Suicides	Homicides	Railroad Accidents	Drowned Accidentally
Adams	E, R. Seehorn	Quincy	45	9	1	4	5
Alexander	R. Fitzgerald	Cairo	4	......	......	2	1
Bond	Dr. G. T Kirkam	Greenville	7	2	1	......	2
Boone	Dr. A. J. Markley	Garden Prairie	4	3	......	......	1
Brown	Dr. W. W. Baxter	Mt. Sterling	3	......	......	......	......
Bureau	Dr. H. N. Keener	Princeton	19	2	......	7	1
Calhoun	A. B. Lowe	Batchtown	5	1	......	......	2
Carroll	Dr. G. W. Johnson	Savanna	16	1	2	6	1
Cass	H. H. Turner	Virginia	9	2	......	1	2
Champaign	Iac. Buch	Champaign	11	......	2	7	......
Christian	D. C. Blount	Taylorville	7	2	2	1	......
Clark	M. F. Rollings	Dennison	5	1	1	1	......
Clay	Dr. J. R. Chatham	Xenia	0	......	......	......	......
Clinton	Dr. Ch. J. Gissy	Germantown	6	1	......	......	1
Coles	W. Kemp	Mattoon	7	2	......	3	......
Cook	Hy. L. Hertz	Chicago	1,305	155	42	184	129
Crawford	D. B. Cherry	Robinson	1	1	......	......	......
Cumberland	Ch Peters	Greenup	1	......	1	......	......
DeKalb	Jos. C. Pierce	Malta	5	3	......	1	......
DeWitt	A. J. Morrow	Clinton	5	3	......	......	......
Douglas	Dr. W. T. Pulliam	Tuscoia	6	1	1	1	......
DuPage	Dr. H. C. Daniels	Naperville	13	......	......	11	......
Edgar	Dr. W. W. Wilson	Paris	5	1	......	2	......
Edwards	Dr. H. J. Walters	Albion	2	......	....	......	......
Effingham	Dr. F. W. Goodell	Effingham	3	......	......	......	......
Fayette	Dr. H. J. Smith	Vandalia	5	......	1	1	......
Ford	Dr. E. B. Perry	Melvin	1	......	......	1	......
Franklin	J. L. Ragland	Benton	3	......	......	......	......
Fulton	Dr. Isaac L. Beatty	Fairview	7	2	1	......	......
Gallatin	W. H. Blades	Shawneetown	10	1	2	3	1
Greene	G. W. Thompson	Roodhouse	8	3	1	......	1
Grundy	Dr. T. A. Hand	Morris	20	5	1	6	2
Hamilton	Alex. T. Sullinger,	McLeansboro	2	......	2	......	......
Hancock	Herm. Berger	Nauvoo	2	1	......	......	......
Hardin	John B. Tucker	Cave in Rock	0	......	......	......	......
Henderson	Dr. W. D. Henderson	Biggsville	0	......	......	......	......
Henry	Dr. Frank McArthur	Geneseo	2	......	......	......	1
Iroquois	Jas. L. Laird	Milford	5	2	......	......	......
Jackson	John Dillinger	Grand Tower	12	......	5	......	2
Jasper	Jos. W. Hesler	Willow Hill	1	......	1	......	......
Jefferson	W. W. Hicks	Laur	5	1	1	......	2
Jersey	Dr. E. L. H. Berry	Jerseyville	3	......	......	......	......

Inquests by Counties—Continued.

County.	Coroner.	P. O. Address.	No. of Inquests	Suicides	Homicides	Railroad Accidents	Drowned Accidentally
Jo Daviess	Wm. Passmore	Council Hill	10	2	1		3
Johnson	Fel. A. Boyt	Vienna	3	2			1
Kane	Dr. H. W. Williams	Batavia	32	5	3	6	8
Kankakee	Aug. Schmidt	Kankakee	18	2	1	6	5
Kendall	Dr. R. A. McClelland	Yorkville	5	1		1	1
Knox	Dr. D. W. Aldrich	Galesburg	10	3		3	
Lake	Dr. F. Thompson	Waukegan	11	3		1	
LaSalle	Dr. F. Clendenin	LaSalle	46	7	3	12	8
Lawrence	Dr. H. V. Lewis	Bridgeport	1			1	
Lee	John C. Church	Amboy	8	1	1	1	1
Livingston	Dr. Ch. H. Long	Pontiac	11		1	1	1
Logan	W. Bermingham	Lincoln	11	2	1	1	3
Macon	Dr. P. Perl	Decatur	20	2	1	3	3
Macoupin	F. B. Simpson	Medora	10	4	1	2	
Madison	P. I. Melling	North Alton	47	3		5	8
Marion	J. H. Lakin	Salem	13	1	1	1	1
Marshall	Wm. B. Holler	Sparland	4				2
Mason	M. Gordon	Forest City	5	2	2		1
Massac	E. B. Cropper	Metropolis	9	1	2		3
McDonough	John Hindman	Burdolph	5			2	
McHenry	Dr. C. E. Cook	Huntley	9	1		1	
McLean	B. W. Riser	Bloomington	25	6		4	1
Menard	W. R. McAtee	Petersburg	8				4
Mercer	W. C. Porter	Keithsburg	4			1	1
Monroe	S. B. Hilton	Waterloo	9	3	1		1
Montgomery	Dr. W. F. Hicks	Raymond	8		1	3	
Morgan	I. R. Knollenburg	Jacksonville	15	3	3	3	
Moultrie	Dr. E. L. Hardin	Sullivan	2				1
Ogle	Dr. John F. Snyder	Monroe Center	13	5	2	1	1
Peoria	Jas. Bennett	Peoria	37	8		7	3
Perry	L. J. Farmer	Tamaroa	6	2		1	
Piatt	J. H. Barns	Bement	5		1	1	
Pike	L. N. Ferris	Barry	2		1		1
Pope	A. F. Kreipka	Golconda	3		2		1
Pulaski	S. H. Graves	Mound City	6	3		1	
Putnam	Dr. D. B. Holsburg	Granville	0				
Randolph	Dr. S. H. Wirtz	Coultersville	8	2		2	1
Richland	B. F. Smith	Olney	2	1			
Rock Island	D. Hawes	Rock Island	26	3	2	7	3
Saline	S. Parks	Carriers Mills	4	1		1	1
Sangamon	E. S. Elkin	Springfield	35	6	1	2	3
Schuyler	John P. Skiles	Rushville	6		1	1	2
Scott	Vacancy		No re	port..			
Shelby	W. Sampson	Shelbyville	6	2		1	
Stark	Dr. J. R. Jones	Bradford	2		1		
St. Clair	Dr. Alex. Woods	Freeburg	98	15	5	12	14
Stephenson	O. E. Stearns	Freeport	14	7		1	3
Tazewell	Dr. W. T. Griffith	Washington	19	6		6	2
Union	Dr. W. M. Eddleman	Anna	9	1	3	4	1
Vermilion	John W. Parker	Danville	10	3		5	1
Wabash	Dr. A. J. McIntosh	Allendale	4	1	2	1	
Warren	Dr. S. M. Hamilton	Monmouth	7	2		3	
Washington	Dr. E. Boerner	Venedy	5				
Wayne	D. J. E. Inskep	Merriam	1				1
White	W. Williams, Jr	Emma	5	1	2	1	
Whiteside	Dr. H. C. Donaldson	Morrison	9			3	2
Will	Dr. J. B. Shaw	Joliet	50	6	2	10	6
Williamson	John H. Kopp	Lake Creek	4	1	1		
Winnebago	W. C. McCaughey	Rockford	10		1	3	4
Woodford	Vacancy		No re	port..			
			2,345	335	118	374	264

METEOROLOGICAL TABLES.

STATEMENT, *furnished by the Chief Signal Officer, U. S. A., showing mean monthly barometer, reduced to sea level; temperature; relative humidity; total amount of percipitation in inches and hundredths; prevailing direction of the wind; and the total wind movement in miles—at the Signal Service stations at Cairo, Chicago, Peoria and Springfield, Ill., Dubuque and Keokuk, Ia., Indianapolis, Ind., and St. Louis, Mo., for the year 1886.*

SUMMARY FOR CAIRO, ILL., 1886.

MONTH—1886.	Mean barometer (corrected)	TEMPERATURE.			Precipitation—inches	Mean relative humidity	WIND.	
		Maximum	Minimum	Mean			Prevailing direction	Total movement
January	30.095	57.2	—9.0	25.4	3.82	78.8	W	6,499
February	30.141	60.2	—2.6	35.1	2.54	66.6	NW	5,922
March	29.998	78.7	22.6	44.7	2.84	65.4	N	8,457
April	30.005	80.5	29	58.0	6.64	65.8	S	6,282
May	29.939	87.6	48.5	68.7	2.98	71.0	S	5,899
June	29.943	88.4	55.5	71.9	4.87	76.5	N	4,313
July	29.938	92.9	62	78.1	1.01	73.3	N&SW	3,334
August	29.972	97	57.8	76.8	2.84	76.3	S	4,308
September	30.071	88.5	50.8	70.8	2.52	74.6	S	4,409
October	30.191	82.6	32	59.5	0.45	68.1	N	4,441
November	30.083	74.2	24.6	45.3	5.73	65.3	S	6,341
December	30.184	57.2	11.3	30.7	1.74	73.6	N	6,848
Total	....	....	....	....	37.98	....	....	....

Meteorological Tables—Continued.

SUMMARY FOR CHICAGO, ILL., 1886.

MONTH—1886.	Mean barometer (corrected)	TEMPERATURE.			Precipitation—inches	Mean relative humidity	WIND.	
		Maximum	Minimum	Mean			Prevailing direction	Total movement
January	30.053	48.3	—14.4	21.4	3.56	83.7	W	7,498
February	*30.073	*55.6	—*6.3	*28.1	*1.51	*76.7	*SW	*6,895
March	29.969	69.9	15.3	36.1	1.79	78.0	NW	6,854
April	30.050	81.3	23.1	49.1	1.29	82 8	N, SE, NW	6,148
May	29.943	82.1	39 9	57.0	1 00	71.8	N	5,752
June	29.962	87.3	49.0	66.0	.94	72.7	NE	4,932
July	29.955	94.5	55.1	71.4	1.53	70.1	NE	5,472
August	29.962	91.6	53.0	72.4	3.38	72.8	E, SE, NE	5,432
September	30.034	86.3	41.6	66.1	6.93	71.3	SE	5,543
October	†30.165	†79.4	†32	†56.6	†1.42	†71.2	†S	†5,568
November	30.003	68.8	16.4	38.2	1.66	76.7	SW	6,924
December	30.158	59.8	—9.5	25.0	1.76	75.5	S	5,111
Total	....	....	....	....	26.77	....	....	....

*For 27 days. †For 30 days.

SUMMARY FOR PEORIA, ILL., 1886.

MONTH—1886.	Mean barometer	TEMPERATURE.			Precipitation—inches	Mean relative humidity	WIND.	
		Maximum	Minimum	Mean			Prevriling direction	Total movement
January	*29.663	56	—18	19.9	2.41	76	W	....
February	29.668	52	—15	29.2	1.86	72	W	....
March	29.554	78	17	40.2	2.25	67	NW	....
April	29.599	88	23	57.7	2.75	63	S	....
May	29.528	92	39	67.7	2.90	62	N	....
June	29.542	95	48	74.2	3.67	63	E	....
July	29.541	100.5	55	80.2	0.47	57	E	....
August	29.554	99	52	78.8	3.30	63	S	....
September	29.638	94	44	69.8	4.68	67	S	....
October	29.744	84	32	58.4	1.81	65	S	....
November	29.612	72.5	17.5	39.6	1.34	64	S	....
December	29.754	56	—15	23.0	0.89	71	N	....
Total	....	....	....	....	28.33	....	....	....

*Barometer not reduced to sea level.

SUMMARY FOR SPRINGFIELD, ILL., 1886.

MONTH—1886.	Mean barometer (corrected)...	TEMPERATURE.			Precipitation—inches......	Mean relative humidity......	WIND.	
		Maximum ..	Minimum ..	Mean			Prevailing direction.	Total movement....
January....................	30.094	58	—12.9	22.7	2.19	74.1	NW	7,895
February..................	30.108	58	—11.1	31.0	1.86	70.4	S	8,044
March......................	39.980	77	18.0	41.3	2.45	69.7	NW	8,170
April........................	30.008	81	24.5	56.1	2.98	68.4	S	7,411
May..........................	29.938	85.8	42.9	65.6	3.56	67.4	S	5,427
June........................	29.946	88.1	49.5	71.4	3.83	67.7	S, SE	4,165
July.........................	29.930	95.9	58.5	77.6	0.05	61.3	NE	3,733
August.....................	29.972	99.4	54.4	76.1	4.19	69.7	S	4,606
September................	30.056	89.6	44.6	68.2	7.24	71.5	S	5,404
October.................	30.190	82.7	34	57.9	0.80	67.2	S	5,155
November................	30.051	72.9	20.3	42.4	1.74	66.2	W	7,344
December	30.198	54.5	—5.6	26.4	0.80	72.9	S	5,937
Total...................	....	....	....	....	31.69	....	....	....

SUMMARY FOR DUBUQUE, IOWA, 1886.

MONTH—1886.	Mean barometer (corrected)....	TEMPERATURE.			Precipitation—inches.........	Mean relative humidity........	WIND.	
		Maximum ..	Minimum...	Mean.......			Prevailing direction.	Total movement....
January....................	30.107	37.8	—23.1	12.7	3.17	78.9	NW	3,356
February..................	30.074	48	—21.2	21.8	1.36	76	NW	3,870
March......................	29.993	65.2	—0.9	31.3	4.32	74.5	NW	4,223
April........................	30.001	81.6	13.8	51.0	2.12	68.6	SE	3,842
May..........................	29.930	88.1	35.8	61.1	4.17	62.3	NE, S, NW, SW	3,230
June........................	*29.932	*92.5	*42.3	*68.4	*0.71	*60.6	*NW	*2,274
July.........................	29.917	100.4	53.1	75.2	0.89	59.4	S	3,218
August.....................	29.940	97.4	45.6	74.1	0.67	65.3	S	3,261
September................	30.000	91.9	35.2	63.6	3.10	71.1	S	3,846
October....................	30.144	85.2	26.5	54.8	4.08	68.0	S	3,281
November.................	30.009	69.5	11.3	33.2	1.89	72.4	W	4,133
December	30.202	50.4	—23.5	15.7	1.03	75.4	NW	2,980
Total....................	....	....	....	....	27.51	....	....	....

* 23 days.

SUMMARY FOR KEOKUK, IOWA, 1886.

MONTH—1886.	Mean barometer (corrected), ...	TEMPERATURE.			Precipitation—inches........	Mean relative humidity......	WIND.	
		Maximum ..	Minimum...	Mean.......			Prevailing direction.	Total movement....
January....................	*30.103	*52.3	*—18.7	*1.46	*2.08	*86.7	*NW	*6,442
February....................	30.100	56.3	—17.7	26.3	1.40	77.4	NW	6,315
March	29.977	76.2	12.1	36.5	2.25	75.7	NW	7,091
April	29.981	81.9	23.7	53.6	1.52	72.5	SE	7,191
May....................	29.919	86.0	40.1	64.1	4.49	71.5	E	4,539
June....................	29.927	88.8	46.1	70.7	2.86	70.5	N, NE, S, NW	4,540
July	29.913	97.5	58	77.5	0.65	60.5	S	4,192
August	29.929	99.1	53.4	77.1	5.90	64.2	S	5,273
September	30.006	92.1	42.1	68.2	3.95	70.5	S	6,331
October....................	30.150	81.1	33.3	57.6	2.38	66.1	S	5,595
November	30.031	69.4	15.2	38.5	1.15	71.0	NW	7,369
December	30.205	55.0	—14.9	21.2	1.03	79.6	NW	5,715
Total....................	....	....	....	....	33.66	....	....	....

*30 days.

SUMMARY FOR INDIANAPOIS, IND., 1886.

MONTH—1886.	Mean barometer (corrected)	TEMPERATURE.			Precipitation—(inches)........	Mean relative humidity.......	WIND.	
		Maximum ..	Minimum...	Mean.......			Prevailing direction..	Total movement.....
January....................	30.053	55.3	—15.0	22.2	4.02	85.8	W	5,296
February....................	30.114	54.5	—4.2	28.2	1.51	76.4	S	5,163
March....................	29.975	75.9	15.6	39.4	2.85	70.5	NW	5,177
April....................	30.029	84.0	24.5	54.6	3.09	66.0	SE	4,164
May	29.925	87.1	39 1	64.3	3.82	69.6	SW	3,477
June	29.951	89.0	46.9	69.2	4.92	69.4	S	3,151
July....................	29.936	94.8	50.9	74.3	2.27	64.8	SW	2,921
August....................	29.982	92.2	53	72.9	6.70	72.1	S	3,028
September	30.084	90.2	43.3	66.6	3.43	70.3	S	3,320
October	30.198	82.3	31.7	55.3	1.20	66.3	S	3,161
November	30.051	71.6	16.5	39.3	3.87	66.9	SW	4,730
December	30.169	57.7	—3.5	25.2	2.20	77.0	NW	4,655
Total....................	....	....	....	....	39.88	....	....	....

SUMMARY FOR ST. LOUIS, MO., 1886.

MONTH—1886.	Mean barometer (corrected).....	TEMPERATURE.			Precipitation—(inches)........	Mean relative humidity........	WIND.	
		Maximum ..	Minimum...	Mean.......			Prevailing direction..	Total movement-.....
January....................	30.098	60	—8.2	24.8	3.11	76.0	NW	9,057
February....................	30.115	63.6	—7.9	35.1	1.71	69.7	S	8,897
March..........................	29.992	81.2	23.0	44.5	3.04	68.8	S	9,991
April...........................	30.002	84	24.1	59.1	2.10	70.4	SE	8,323
May.............................	29.927	89.8	46.6	69.4	7.84	71.7	NS	6,890
June.........................	29.942	90.8	57.0	74.2	7.09	71.1	N	6,648
July............................	29.927	96.1	62.7	80.4	0.55	66.2	NE	5,803
August........................	29.946	102.0	61.0	79.9	2.44	59.8	SW	6,945
September	30.036	91.5	47	72.1	9.60	61.2	S	7,842
October	30.170	82.7	35	61.8	0.85	56.4	S	6,230
November....................	30.045	75.1	23.2	45.6	3.36	61.4	WS	8,772
December	30.182	61.1	—2.8	29.8	2.65	69.0	N	8,386
Total....................	....	....	....	....	44.34	....	....	....

STATE MEDICINE.*

By John H. Rauch, M. D.

Article II, Section 4 of the by-laws of the American Medical Association prescribes that the "chairmen of the several Sections shall prepare and read, in the general sessions of the Association, papers on the advances and discoveries of the past year in the branches of science included in their several sections."

In attempting to discharge this duty for the Section in State Medicine, it will be well, first, to define the subject and the branches of science which it includes. I have been unable to find a definition sufficiently comprehensive to cover what is conceived to be properly embraced within the scope of State Medicine. Dunglison defines it to be "the medical knowledge brought to bear on State objects, as on public hygiene and matters pretaining to medical jurisprudence." In the introduction to his Manual of Practical Hygiene, Parkes, in pointing out the limitations of this subject, says: "In some cases the rules of hygiene could not be followed, however much the individual might desire to do so. For example, pure air is a necessity for health; but an individual may have little control over the air which surrounds him, and which he must draw into his lungs. He may be powerless to prevent other persons from contaminating his air and thereby striking at the very foundation of his health and happiness. Here, as in so many other cases which demand regulation of the conduct of individuals towards each other, the State steps in for the protection of its citizens, and enacts rules which shall be binding upon all. Hence arises what is now termed 'State Medicine'—a matter of the greatest importance."

But in illustrating this "matter of the greatest importance," Dr. Parkes clearly confines State Medicine to the relation of the State to purely sanitary matters—the protection of the individual against being placed under unfavorable hygienic conditions by the action of others, as of workmen by an ignorant or careless employer, of tenants by landlords, of food consumers by adulteration, etc., etc.

---

*An address delivered at the Thirty-seventh Annual Session of the American Medical Association in St. Louis, May 6, 1886, by the chairman of the Section of State Medicine.

De Chaumont greatly widened this definition in the preliminary lecture of his course on State Medicine, delivered in 1875. "State Medicine," he says, "has been written about, talked about, and quarreled about, but it has rarely been explicitly defined, and to many it conveys no very distinct idea. It has been confounded with public health, and generally much misunderstood, the part being frequently taken for the whole, and the wider scope of its action but little apprehended. It includes the questions of public health and hygiene, general, special and individual, but its own appropriate province is such general control as will determine the several specialties in the directions most fitted for the well-being of the community. In fact, we may succinctly define State Medicine to be, in quasi-legal phraseology, 'the office of the sanitarian promoted by the State,'" and he predicts both its perfection and its extinction when the sanitarian as differentiated from the community generally, and the State as a controling and interfering influence, shall have ceased to be—the one because every member of a perfected community will be a sanitarian, and the other because in such an ideal community State interference will have become unnecessary.

There is still the limitation of the term "medicine" to the sanitarian in this definition, a distinction between preventive medicine —the field of the sanitarian; and curative medicine—the field of the physician. But I think it is coming to be recognized that such a distinction is artificial and unnecessary, and I agree with Richardson, who, in speaking of the preventive scheme of medicine, says of the so-called science and art of preventive medicine: "It is not a science, it is not an art, separated necessarily or properly from curative medicine. On the contrary, the study of prevention and cure proceed well together, and he is the most perfect sanitarian, and he is the most accomplished and useful physician, who knows most both of the prevention of disease and of the nature and treatment of disease; he who knows, in fact, the before and the after of each striking phenomenon of disease that is presented for his observation."

In this evolution of a definition one or two more quotations may be admissible. Addressing the Association at the Atlanta meeting in 1879, on "The Regulation of Medical Practice by State Boards of Health as Exemplified by the Execution of the Law in Illinois," Dr. H. A. Johnson suggested, in his conclusion, "that it is the duty of the State to protect its citizens from the injuries they may sustain from the practice of incompetent physicians and surgeons, as well as from any other source of danger to public health." And in the summary prefacing the Sixth Annual (1883) Report of the ILLINOIS STATE BOARD OF HEALTH, it is observed that "boards of health are created and maintained for the conservation of the interests of health and life. Ordinarily their functions are limited to dealing with sanitary questions; with the removal of the causes of preventable disease and premature death.

This Board, however, is also charged with the execution of the act to regulate the practice of medicine in the State; and thus the medical profession, one of the most important agencies which is concerned with the interests of health and life, is brought within the scope of sanitary legislation. To improve the status of the individual practitioner, and to develop a well-trained and thoroughly educated medical profession, must result in increasing the value of this force in sanitary science and public hygiene; a force which, in the nature of things, must always exist so long as there are physicians and patients; and the character and influence of which must always hold a direct relation to the tone, the attainments, and the competency of those by whom it is exerted."

The application of the term State Medicine is thus seen to have been successively extended from the agency of the State in matters of hygiene beyond the control of the individual, first to measures of preventive medicine in general, and thence to curative medicine in so far as it is the duty of the State to regulate medical practice. State Medicine may therefore be now defined as the connection of the State with "that branch of science which relates to the prevention, cure or alleviation of the diseases of the human body."* It embraces not only all public sanitary measures, but also the practice of medicine in so far as this is regulated by the State. Therefore, any report upon "the advances and discoveries of the past year" in the branches included in this section may logically begin with the subject of the regulation of medical practice, which also and necessarily includes the subject of medical education.

STATE REGULATION OF MEDICAL PRACTICE AND MEDICAL EDUCATION.

Before proceeding to discuss the present status and recent progress in these matters, it will be useful to set forth, briefly, the authority by which the State assumes to regulate the practice of medicine. That authority is the inherent and plenary power which resides in the State to prohibit all things hurtful, and to promote all things helpful, to the comfort, welfare and safety of society. Speaking specifically of the Illinois Medical Practice Act, ex-Governor John M. Hamilton has recently said: "The object of the Medical Practice Act was primarily a police regulation. Incidentally it was educational. Primarily the purpose of the law was to rid the State of incompetent, ignorant and dangerous mountebanks and quacks, who were carrying on a fraudulent and nefarious business by all manner of deceit in a pretended practice of medicine among the people. It was to protect the lives, the health, the morals and the property of the people of the State from the shameless depredations of swindlers and adventurers who, by all manner of false representations and deceptive promises, were taking advantage of the misfortunes of the people in sickness and ailments of all kinds, to still further injure their health, endanger their lives and rob them of their money.

---

* The quotation is the definition of medicine according to Webster.

"Incidentally the law was designed to require a reasonable amount of education to fit one for the practice of medicine before he should be allowed to enter that profession, so directly and intimately connected with the lives, the health and the happiness of the people. Both these purposes come clearly within the police powers of the State in affording such protection to its citizens."

An unbroken line of authorities, from Blackstone down to the most recent decisions of the various supreme courts, hold that the police powers of the State are plenary and inalienable, co-extensive with the natural right of self-protection; that their exercise is demanded and justified by the "law of over-ruling necessity;" and that, broadly, they are the foundation of all laws and regulations for the well-being or government of the people, and especially, of all laws, ordinances, rules and regulations for the preservation of the health or safety of the community.

Early in the history of the country, laws, thus founded, were enacted for the regulation of the practice of medicine. But the sparse population and the conditions which then obtained, as well as the fact that many of the enactments were so onerous and restrictive that they came to be regarded by the public as in the nature of class legislation, operating to make the profession a close guild or trades union, rendered their enforcement impracticable. They were gradually repealed or fell into a state of "innocuous desuetude;" until about 1830–1840 there were practically no restrictions; the profession became a "free-for-all;" bogus diplomas were openly and unblushingly sold and displayed by their purchasers, as credentials of membership in a lesrned profession; the country was overrun by hosts of ignorant, immoral and dangerous swindlers, self-styled "doctors," who preyed upon the unfortunate afflicted; "isms" and so-called "schools" of medical practice multiplied, a mushroom crop of diploma-mills sprang up over the land; and as a natural result, the general standard of medical education and of requirements for graduation—except among the best class of medical colleges—fell lower and lower.

A reaction from this condition began at about the close of the first century of our national existence, at which time, 1876, North Carolina had a well-framed law, creating a State Board of Medical Examiners, passed in 1859. Kentucky had enacted a law in 1874, creating District Examining Boards, but except in a few counties, this soon became a dead letter. In 1875 Nevada, and in 1876 California and Texas legislated upon the subject. In 1877 Alabama established a State Board of Medical Examiners, and Illinois passed a Medical Practice Act, the execution of which was devolved upon a State Board of Health created by a separate enactment. Within the next two years only two other States took action—Kansas in 1879 (repealed in 1881) and New York in 1880. In 1881 nine States and one Territory enacted medical practice laws, viz: Arizona, Arkansas, Colorado, Connecticut, Florida, Georgia, Nebraska, New Jersey, Pennsylvania and Wisconsin. In 1882, Loiusiana, Mississippi, New Hampshire, New Mexico, South Carolina, West Virginia and Wyoming; in 1883, Delaware, Michigan, Minnesota and Missouri; in 1884, Dakota and Virginia, and, since the last meeting of the Association, Indiana and Iowa have swelled the total to thirty-three States and Territories of the Union, which now exercise some degree of legislative control over the practice of medicine within their borders.

The general drift and tendency of this legislation are toward securing a recognized standard of professional attainments, evidence of which—with a few notable exceptions—is afforded by the presentation of a diploma of graduation from some legally chartered institution in good standing; or, in the absence of this, an examination more or less strict, in the various fundamental branches of medical science. The exceptions are in the States of Alabama, Mississippi, North Carolina and Virginia, where the diploma is ignored, and the applicant for admission to practice must establish his possession of the necessary skill and ability so far as an examination may determine the same.

As an evidence of fitness and qualification the diploma must obviously vary in character with the character of the institution by which it is issued. Medical instruction in this country is almost entirely a matter of private enterprise, aud until within a few years, numerous "colleges" with the briefest of lecture-terms, conducted by the scantiest of faculties—in which one man often played many parts—innocent of clinical, surgical or anatomical material, and with the most charitable of examinations, have graduated into the profession all who could pay the necessary fees and armed them with the talismanic diploma.

Since 1765 a total of 225 medical educational institutions have been founded—not established—in this country, of which number 105 are now fortunately extinct. There are still remaining 120 medical schools of all kinds in the United States, and among them, it is only fair to say are some in which the course of instruction, the facilities and the competency of the teachers are as high as anywhere in the world. Within the last twenty years there has been, in fact, a marked and gratifying improvement in the standard of medical education. I summarize a few illustrations of recent improvement from my last report on Medical Education in the United States and Canada: There are now 93 out of the existing 120 colleges in the United States, which exact an educational requirement as a condition of matriculation; in the first report there were only 45. Attendance on three or more lecture-courses before graduation is now required by 24 colleges, as against 12 heretofore; and provision is made for a three or four years graded course by 58 others. Hygiene is now taught in 91 colleges, and medical jurisprudence in 97; as against 42 and 61, respectively, heretofore. The average duration of lecture terms has increased from 23.5 weeks to a fraction over 25 weeks; seven more colleges have lecture terms of five months or over, and ten more have terms of six months or over, as compared with the sessions of 1882–1883.

While much of this progress is due to a general and increasing desire on the part of the profession to raise the standard of attainments necessary to enter its ranks, and to the enforcement of certain requirements in States which have enacted laws regulating the practice of medicine, it will not be invidious to attribute a fair share to the adoption in 1880, by the ILLINOIS BOARD, of a schedule of minimum reqirements, enforced since 1883, and which prescribes that a medical college, in order to be held in good standing for the admission of its graduates to practice in Illinois, shall exact such a general preliminary education of the intending student before his admission to the lecture-room, as will enable him to comprehend the instruction therein given; and shall issue its diploma conferring the degree of M. D., only upon the completion of such curriculum of study—as to the branches of medical science taught, the duration of the reading, and of lecture-terms, and the amount of practical instruction in hospital and at the bedside as obtains in the average medical school.

Minnesota, Missouri and West Virginia exact substantially the same standard, and the work of the Minnesota Board especially has been wide-reaching and beneficial in this respect. The Iowa law, just enacted, confers similar powers, and the influence upon medical education of this group of States—Minnesota, Missouri, Iowa and Illinois—in establishing a uniform test of the "good standing" of a medical college cannot but be felt throughout the country. Fully one-third of the new graduates every year settle in the West, and colleges must, perforce, take cognizance of this fact.

While the schedule of minimum requirements does not set up so high a standard as that aimed at by the American Medical College Association, it has the advantage of applying to all schools of medicine and having been successfully enforced for three years. Furthermore, it is susceptible of modification, and the question is already being considered whether the time is ripe for a further advance. Until within a short time there has been, for sixty years, no marked departure from the orthodox three years of study and two courses of lectures as the requirements of graduation. But, as already shown, there are now twenty-four colleges which practically require four years of study and attendance upon three terms of lectures; and fifty-eight others which make provision for a similar extended course. The domain of medicine has so far widened its borders, especially within the present generation, that the methods and periods of study which sufficed thirty or forty years ago are no longer adequate.

A low standard of medical education, and the absence of uniform legal requirements are also responsible, almost exclusively, for the overcrowding of the profession. Did time suffice it would be interesting to present this matter in detail, but I can now only glance at some of the results of my study of this phase. In 1880 there were, according to the National census, 83,436 physicians in the United States. Since that date there have been added—exclusive of the foreign increment—23,531 new graduates, not including those of the last session, 1885–1886. This makes a total of 106,947, and is an annual increase of over five and one-half per cent. while the annual increase of population is less than two per cent. The annual death-rate of physicians—basing that of the country at large upon the Illinois rate, which I have accurately determined to be 12.38 per thousand—is less than that of adult males engaged in all occupations; and the difference will probably fairly balance the loss by those who retire from practice on account of old age, physical disability, and other causes not connected with the question of fitness and professional success.

It will, then, be within bounds to say that the excess of the percentage of new graduates over the percentage of increase of population represents the number of unnecessary recruits to the ranks of the profession every year.

The answer to the question, What becomes of them? is indicated by these figures concerning the profession in Illinois:

June 14, 1880.	
Total number in practice as shown by official register of that date	5,879
Total number of new certificates issued to new men up to February 10, 1886	2,063
Total number to be accounted for	8,042
February 10, 1886.	
Total number in practice as shown by official register of that date	6,065
Total number died	344
“ “ left the State	1,061
“ “ abandoned practice	572
Total number accounted for	8,042

That is to say, over seven per cent. of the entire number failed as physicians and sought other modes of obtaining a livelihood. It is noteworthy, by the way, that non-graduates fall out in much larger proportion than the graduates, and that the graduates of three-course schools show the smallest percentage of loss, either by removal from the State or by abandonment of practice.

Here are some instructive figures for Chicago: In 1880 there were certificates issued to 172 new comers; five years later only 84 of these remained—a loss of over one-half. In one year the loss was 15 per cent.; in two years, 30 per cent.; in three years, 40 per cent.; in four years, 47 per cent.; and in five years over 51 per cent. In 1881 there were 183, in 1882, 171, 1883, 209, and in 1884, 198 new comers; and in 1885 there remained of each year's group, 97, 116, 145 and 168 respectively.

There are from 1,500 to 2,000 physicians in the State of Illinois more than are necessary to supply the legitimate demands for professional services, and who are not earning a comfortable livelihood from legitimate professional exertion. And what is true of Illinois is probably substantially true of every State in the Union. I will not stop to dwell upon the demoralizing effect of this condition—demoralizing to the individual, to the profession, and to the public. Instances of this demoralization must be familiar to every member of the Association.

On the other hand, and by way of contrast, I wish to add one further illustration from my personal experience. During the past nine years my official position has made me familiar with the professional history and status of over 13,000 men, more or less directly connected with the practice of medicine in Illinois. I have followed up, with especial interest and care the careers of 789 out of 1,000 physicians who studied four years and attended three terms before graduating. These are, with few exceptions, the successful and prominent members of the profession in the different communities in which they reside. They are well-equipped by general education, by an ample period of professional study, by didactic and clinical instruction, and by hospital practice. They are successful, as a rule, because they have fitted themselves to command success, and this Association can do few things more directly in the interest of the public and of the profession than to exert its further influence to increase their number while decreasing the number of the opposite class.

The foregoing considerations seem to me to lead logically to the following conclusions:

1. That the best interests of the public welfare demand the highest attainable standard of educational qualifications, skill, and ability, as well as of professional and personal honor, integrity and morality, among those engaged in the practice of medicine.

2. That in order to secure such a standard it is the duty of the State to exercise the inherent plenary power and authority which it possesses for the protection and promotion of the public welfare.

3. That uniform State laws, exacting of every one aspiring to practice medicine proof of personal fitness and professional competency, would prove the most potent agency in improving the standard of medical education and in enhancing the dignity and usefulness of the medical profession.

Specifically, I wish to suggest:

That the American Medical Association should put itself upon record at this session as recommending the extension of the period of study to four years and of attendance upon lectures to three full terms, with ample hospital practice and clinical instruction, as the requirements for graduation in medicine;

That the section on State medicine be instructed to frame a law for the regulation of the practice of medicine, which law, when endorsed by the Association, shall be the standard with which all existing legislation on this subject should be made to conform as speedily as practicable, and which shall be urged for adoption by those States where no such law now exists.

Whether such a law should establish a single State Examining Board, which, independent of any influence from the teaching interest through a diploma or otherwise, should admit to practice only upon actual examination; or whether the diploma of a college in good standing should be accepted as proof of necessary qualifications, are questions for earnest consideration. If the policy of those States which are enforcing a standard of requirements whereby to test the good standing of a college be continued in good faith and with as much effect during the next twenty years as during the past three, there would be little to choose between the two modes. But before an independent examining Board, intent only upon ascertaining the applicant's moral and professional fitness, the graduates of all colleges would stand alike upon their individual merits. The effect would be to encourage the tendency to make the science of medicine as exact as it is complex, and to obliterate much of the element of empiricism which still justifies the use of the term "art" in its designation.

By either mode the State may promote the public welfare, and through a wise regulation of the practice of medicine elevate the standard of medical education, which is the foundation of the practice. And it seems to me especially fitting that the American Medical Association should again make its influence felt in this direction. Its earliest labors, and among its most important and successful, were devoted to securing a "uniform and elevated standard of requirements for the degree of Doctor of Medicine." Its further efforts at this time should be attended with even greater success.

ADVANCES AND DISCOVERIES IN PREVENTIVE MEDICINE.

While there has been this marked and gratifying improvement in the branches thus far considered—now clearly recognized as belonging to the domain of State Medicine—the past year has witnessed equally satisfactory practical advances in the more familiar province of Preventive Medicine. The number of sanitary organizations, both legal and voluntary, has increased; the contributions to sanitary literature have been numerous and valuable; and professional and public interest and effort have been enlisted as never before in attempts to remove or abate the preventable causes of disease, and to discover and perfect safeguards against the great pestilences. To a great extent this has been stimulated by the prevalence of Asiatic cholera in some parts of Southern and Western Europe, and the consequent dread of its extension to our shores. Fortunately, the apprehensions entertained at the date of the last meeting of the association have not been realized, and the country has been practically free from any general or noteworthy epidemic, notwithstanding the prevalence of small-pox in some parts of Canada.

State and municipal boards of health have generally done effective work in their respective spheres. In some States a general sanitary survey has been undertaken, and house-to-house inspections have been pushed in many cities, towns and villages, and the nuisances and defects thus disclosed, both of a public and private nature, have been largely remedied. As was frequently remarked during the past summer and fall, an amount of general and local "cleaning up"—which is the essence of sanitation—was accomplished, which could not fail to have an appreciable effect upon the public health. Unfortunately, the subject of the registration of vital statistics is in such an imperfect and unsatisfactory condition in this country that it is not possible to give any comparative figures by which to measure this gain for the whole country; but the mortality returns of the large cities generally show a reduction in the death-rate of 1885 as compared with the average death-rate for several years previous.

Four more State Boards of Health were established in 1885–86, the list now comprising the following thirty-one organizations, the dates of the establishment of which are prefixed: In 1869, Massachusetts;* in 1870, California; in 1872, Minnesota; in 1873, Alaabama, Michigan, Wisconsin; in 1874, Maryland; in 1876, Colorado, Louisiana, New Jersey; in 1877, Illinois, Mississippi, Rhode Island, Tennessee; in 1878, Connecticut, Kentucky, North Carolina; in 1879, Delaware, Iowa, South Carolina; in 1880, New York, West Virginia; in 1881, Arkansas, Indiana, New Hampshire; in 1883, Missouri; in 1885, Dakota, Kansas, Maine, Pennsylvania; and in 1886, Ohio.

These boards, it is proper to remark, owe their existence largely to the influence of the American Medical Association, which has for years actively promoted their organization.

While states and municipalities are thus generally exerting themselves for an efficient protection of the public health, our national health service remains in a very unsatisfactory condition. Notwithstanding the efforts of the profession generally and of many health organizations to secure action by Congress for the remedy of this condition of affairs, nothing definite has yet been done. Three different bills have been introduced during the present session, but there is little hope of either of them receiving favorable consideration.

One thing remains clear: Whether by the rehabilitation of the National Board or by the creation of a new organization, it is the imperative duty of Congress to complete the health defenses of the country. Municipalities have their legitimate sphere within which they alone can act and are responsible, and next beyond which the authority and resources of the State are demanded. But neither municipalities nor States can protect themselves against foreign pestilences without the assistance of the national authority, nor can they properly guard themselves against inter-state infection or contagion without the coöperation of the same authority. I have already dealt with this subject fully in an address before the National Conference of the State Boards of Health in 1884, on the "Prevention of the Introduction of Asiatic Cholera," in a report made in the early part of of the present year on our "Coast Defences against Asiatic Cholera," and elsewhere.

---

*This board is now separated from the Board of Lunacy and Charity, with which it had been associated since 1878.

Among the voluntary organizations, the work of the American Public Health Association during the year has been of more than usual practical value The Lomb Prize Essays, and especially the "Report on Disinfectants and Disinfection," are substantial additions to sanitary knowledge. The Sanitary Council of the Mississippi Valley has not been called upon for action, but its organization is preserved ready for an emergency. Nothing definite was accomplished at the last National Conference of State Boards of Health, which was held during the Washington meeting of the Association.

Abroad, a second series of sessions of the German Cholera Conference was held in Berlin, May 5–7, 1885, at which the subjects of the etiology and prevention of cholera were discussed by Koch, Pettenkofer, Virchow, Hirsch and others, but without eliciting much which was new, or settling any of the mooted questions. Prof. Koch summarized the chief measures to be taken against the disease, and which, so far as they go, do not differ from those adopted by good sanitary authority in this country. They dealt, however, exclusively with the local safeguards of sanitation, disinfection, isolation, supervision, etc., and ignored measures of exclusion of the disease by notification, maritime sanitation, supervision of ports of embarkation, and quarantines of inspection, observation and sanitary work at ports of arrival.

The International Congress of Hygiene, which has been held successively at Brussels, Paris, Turin, Geneva and the Hague every alternate year for the past ten years, and which should have been held this year at Vienna has been postponed until 1887, for some reason not yet announced.

Following the adjournment of the Berlin Conference, an International Sanitary Conference was held at Rome under the auspices of the Italian Government. Although its paramount object was the discussion of questions relating to the prevention of cholera, the subject of yellow fever was also considered in the same relation, through the efforts of the American delegate, Dr. George M.

Sternberg. The delegates were of two classes, diplomatic and technical or professional; at an early stage a Technical Commission was formed, which finally agreed upon substantially the same measures that advanced sanitarians in this country consider necessary for the limitation and suppression of cholera, yellow fever and other communicable diseases which, under bad sanitary conditions of vessels and places, may become epidemic. The exceptions to such agreement were the English delegates, composed of gentlemen whose experience with cholera had been mainly limited to India, and who, in consequence, deny the communicability of the disease through human intercourse, deny the infectiousness of cholera dejecta, and pronounce disinfection a farce and unscientific. The Conference adjourned to meet again in the fall, but this intention was not carried out.

As I have heretofore observed, the practical benefit to be derived from these conferences—in the absence of authority to make an international sanitary convention, binding upon all interested—is the interchange of views, the dissemination of knowledge, and the formulation of such views and knowledge. So far as this country is concerned, they have not changed the status in any respect. We must continue to rely, for the exclusion of cholera and other Old World pestilences, upon such precautionary measures as can be secured at ports of arrival.

With the object of determining to what extent such precautionary measures may be secured, especially against Asiatic cholera, I have made an inspection of the quarantine maintained upon the Atlantic and Gulf coasts from the St. Lawrence to the Rio Grande. The results of this inspection have been published by the ILLINOIS STATE BOARD OF HEALTH, and as the report is accessible to the members I will confine myself on this occasion to the following conclusions: I am more than ever convinced, since completing this inspection, that Asiatic cholera, as well as small-pox and yellow fever, may be effectually excluded from the United States by an intelligent use of the agencies still at our command. This is not a matter of speculation or theory. A great advance has been made in practical sanitary science since 1878—notably in the administration of the maritime quarantines generally, and especially in the improved safeguards at the mouths of the St. Lawrence and the Mississippi. A quarantine of exclusion of the three principal epidemic diseases is now a matter of certainty, depending upon prompt notification of threatened danger; vigilant supervision over commercial intercourse with infected localities; inspection of all immigrants and the enforcement of their vaccinal protection; sanitation and purification of infected vessels and cargoes; isolation of those sick with these diseases; the surveillance of suspects during the periods of incubation; and the employment of other well defined preventive and precautionary measures which now constitute the best modern sanitary practice as applied to maritime quarantine.

It must be repeated, however, that the co-operation of the National Government with State and local authorities, as well as its independent action in matters beyond the reach of States and municipalities, are indispensable to the proper protection of the public health. The duty of Congress in this connection is even more pressing than the responsibility of providing defense against an armed enemy. This latter is a more or less remote contingency, but the assaults of foreign pestilence are constant and continuous.

Thus far we have been providentially spared an invasion of the Asiatic plague which is now filling Great Britain and Europe with anxiety, and the real extent and prevalence of which we do not know. The State department has, within a few days, been requested to appoint sanitary inspectors at the United States consulates at Genoa, Naples, Marseilles and Venice, with instructions—in the language of the dispatch – "to give prompt information of the appearance of cholera in any of the consular districts named, and to report the departure of emigrants and merchandise for the United States from infected districts." But it is already known that the disease exists, and has for months, in several provinces of Italy, including Venetia—cases having been reported in Venice even in January last; it is known that the entire Mediterranean littoral is practically an "infected district," and that the northward march of the pestilence is causing alarm in Austria, Germany, Northern Europe generally, and in Great Britain. The appointment of sanitary inspectors at one French and three Italian ports hardly seems adequate to the occasion. At no time since cholera was announced at Toulon in 1883 has this continent been in as serious danger of an invasion of the disease as it is now. And not alone does cholera threaten, but small-pox is epidemic in many districts with which we are in direct and frequent communication.

It is worthy of passing note that cholera has invaded a new continent within the past few months. Its introduction into Australia, where it had been hitherto unknown, furnishes a fresh proof, if any were necessary, of the transportability of the contagion, of the necessity of supervision over maritime travel and commerce, and of the importance of being prepared to meet and properly deal with an infected vessel upon its arrival.

I cannot close the consideration of this branch of my subject without reference to the obvious necessity of National control of immigration. Sanitary science and public hygiene touch both the individual and the National life at many points. It is a question which is daily and hourly becoming more urgent—as the columns of every issue of every newspaper show—how much longer it will be safe or prudent to continue the unrestricted influx of the vicious, the insane, the pauper and the infected immigrant into our midst. I will not attempt to discuss so momentous a question at the present time and amid the multiplicity of other topics. I have already on more than one occasion expressed my views concerning it. Neither the sanitarian nor the statesman can afford to longer ignore its consideration.

The By-Law calls for a report on the "advances and discoveries of the past year in the branches of science included" in the section. While the workers have been active and their labors faithful in many directions, it is to be feared that the discoveries in preventive medicine are too intangible or too incomplete to warrant much of positive statement. There are new theories and claimed discoveries concerning malaria, cholera, yellow fever, hydrophobia, tuberculosis and other diseases. But whether Klebs and Crudeli or Marchiafava or Celli have found the malaria-germ; whether Koch and his followers or Klein and his *confreres* are correct as to the causative connection of the comma bacillus with Asiatic cholera; whether Domingo Freire and Carmona are to share the obloquy of Ferran or the honors of Pasteur; whether bacteria themselves, or only their products, or whether neither one nor the other, but ptomaines and leucomaines produced by normal vital action, are the morbific agents of disease against which the sanitarian must direct his energies—these and similar questions are yet *sub judice.*

The etiology of such common diseases as diarrhœa and diphtheria are still equally obscure, although some light seems to be thrown upon the origin of certain outbreaks of the latter disease by the observations of Dr. Cresswell, who, in a paper recently read before the London Epidemiological Society, thinks he has traced six outbreaks of diphtheria, for which there was no other obvious explanation, to persons suffering from chronic tonsillar inflammation following attacks of diphtheria, and concerning whom he asks: "Do the violent reactions of the tonsils of these persons to weather changes involve likelihood of rendering them diphtheritically infectious?" In other words, May diphtheria become chronic and liable to periods of infective recrudescence? The question acquires additional importance for the medical officer of health from the fact that the disease is unmistakably increasing in frequency and in its influence upon the death-rate.

Bacteriology may fairly claim to have advanced the science of water analysis, which no longer depends upon chemical and microscopic examination, but for the purpose of the sanitarian must be submitted to the further test of biologic experiment. It has also certainly been of service in raising the art of disinfection to the level of an exact science, and the labors of Sternberg, Smart, Salmon and others in the bacteriological field in the United States, are not unworthy of comparison with the work in Europe.

A reaction, however, seems to be setting in against the sweeping claims of the bacteriologist, and the assertion, for example, that the typhoid bacillus, after twenty years of experiment, has at last been demonstrated to be the true typhoid germ, is open to the criticism of Prof. von Pettenkofer, who, in a recent address on the relationship between bacteriology and epidemiology, points out that the entire environment of a micro-organism and all the conditions which influence its growth, development and results, must be taken into the account, and that the mere fact of setting up a certain train of symptoms in a lower animal analogous to those observed in the human subject is by no means conclusive proof that the specific fungus transmitted from the one to the other is the sole cause of the disease in the higher organism. In this address, which, like all of his contributions to scientific hygiene, is replete with food for thought, Pettenkofer asks what the study of bacteriology has done in advancing practical sanitary measures, and pertinently cites Lister's antiseptic system and Pasteur's rabic inoculation as instances of practical results accomplished without demonstrating the existence of a special form of bacteria or the actual morbific agent. He might still more strikingly have referred to Jenner's immortal discovery.

Concerning this subject of vaccination I beg to call the attention of the members to the additional proof cited in recent reports of the ILLINOIS BOARD, of the superiority of humanized virus, not too far removed, over bovine, in cases demanding promptness and certainty of action. I think this practical point cannot be too strongly insisted upon, and it may be well to repeat, as a fitting conclusion of this address, my remarks on this subject in the paper on "The Relations of Small-Pox and Vaccination" in the Fifth Annual Report of the BOARD (p. 502). Treating of the promptness of action in the face of exposure it is there shown that humanized virus may be depended on to act promptly, much more certainly than bovine. Usually on the second or third, very seldom so late as the fourth day after the insertion of good humanized virus, the popular stage of vaccination will begin, and will be followed, with almost unvarying regularity, by complete development of the vesicle on the eighth day, and by the subsequent appearance of the "index of safety"—the specific inflammation of the skin, or stage of areola. Bovine virus, on the contrary, is subject to all degrees of delay, even to periods of weeks. During the epidemic of 1881–83 this defect of bovine virus was more than once followed by serious consequences. Not alone were lives lost among the exposed members of isolated families, where vaccination was resorted to early enough to have averted an attack had the virus acted promptly, but epidemic outbreaks followed under similar circumstances—that is, in localities where, upon discovery of the first case, vaccination of all unprotected or exposed was at once resorted to with bovine virus, but which either proved so tardy in its action, or so totally inert, as to allow the disease to gain a foothold.

"The loss of a day," says Seaton in his Hand-book of Vaccination, "may be the loss of a life." Hence the necessity for using virus which will act promptly, and not remain latent three, five or any other number of days. Recent experience corroborates observations made during the period from 1866 to 1873, while Sanitary Superintendent of the city of Chicago, to-wit: That it is never too late to vaccinate after exposure, short of the actual appearance of the variolous eruption. If the vaccination be performed within three or four days after exposure, and the areolar stage, the index of safety, be reached in the normal time, an attack of small-pox will almost invariably be averted. With every additional day's delay the protective power will be weakened; but, contrary to the opinion laid down in the text books, experience proves that this protective power is not entirely exhausted until the vaccination is deferred at least up to the beginning of the febrile stage of small-pox.

Of 323 cases of small-pox, in which the patients had never been vaccinated until after exposure, 305 recovered and 18 died, being a less mortality rate than among the 690 cases, which occurred among those who had been vaccinated before exposure only.* In some of these cases vaccination was not attempted until shortly before the beginning of the eruptive stage. A reference to the notes appended to the tabular statement of 1,100 cases, (pages 296–327 inclusive,) will show many instances where vaccination after exposure was successfully resorted to after the expiration of the period ascribed by Marson, Seaton, and others, as the limit beyond which, "whatever the local success of the vaccination, no constitutional effects will be imparted." In these notes will also be found the details of cases where the attempt to vaccinate with bovine virus was only successful after one or more repetitions, with loss of valuable time or where such attempt finally proved wholly unsuccessful. With the exception of one group of six cases—a family vaccinated by the father, a layman—all the vaccinations performed with humanized virus, after exposure, were successful, and the patients recovered, with mild attacks of short duration. But of such vaccinations with bovine virus, over 40 per cent. were failures—that is, in the sense of manifesting activity before the variolous disease began—and of this 40 per cent. of failures there was 30 per cent. of fatal results.

The general tenor of these views is also supported by the figures given in the January number of the *American Journal of the Medical Sciences*, quoting from the "Arbeiten aus dem Kaiserlichen Gesundheitsamte:" "The increase of unsuccessful vaccinations in the German Empire was due to the vaccinations in the Grand Duchy of Hesse, where, owing to the introduction of animal lymph, the number of successful vaccinations decreased from 97.31 per cent., in 1881, to 63.44 per cent., in 1882." And the German Commission on Vaccination report—"For vaccination with humanized lymph may be mentioned the certainty of its action, the simplicity of its machinery, the inexpensive manipulation of the lymph. Against the use of animal lymph may be taken the less certainty of its results, a more complicated machinery and the greater cost of production of lymph." Nevertheless the commission conclude that animal "is capable of supplying the place of humanized lymph."

---

*Tabulated in the Report referred to—p. 223:

"Table II.—Showing Recoveries and Deaths, with percentages, among 1,081 Successfully Vaccinated Cases, Analyzed with Reference to Date of Vaccination in Relation to Exposure."

Commenting upon this, Dr. Buchanan, the medical officer of the Local Government Board, in his last report (1884) says: "In England, these are identical when the operation is done directly from arm to arm, or calf to arm; thus, two operators at the Animal Vaccine Establishment, in London, produced an average of 988 vesicles for every 1,000 insertions of calf lymph made on infants. Now the employment of stored lymph reduces this average by some 20 or 30 per cent., whether humanized or animal lymph be used. Direct vaccination from calf to arm is only possible in large centres of population. In sparsely inhabited districts the use of stored lymph becomes a practical necessity, unless arm-to-arm vaccination be resorted to; hence, there is much probability that the decision of the German Commission will tend to reduce the condition of the German people, as to protection against small-pox, to the condition of the inhabitants of the Grand Duchy of Hesse."

I see no reason--but the contrary—for modifying the judgment expressed in the eleventh of the propositions, concluding the paper above referred to:*

"That the relative advantages of bovine and of humanized virus are still *sub judice* as to the most important point, namely, their comparative protective powers. Humanized virus has been tested for more than eighty years; bovine for about sixteen. The former descended in an unbroken line of vaccinations from the original operations of Jenner, still produces the same typical results, the same regular sequence of phenomena, as those obtained by Jenner himself; the latter produces almost as many varying results as there are propagators. In cases of emergency, where promptness of action is important, the preference must be given to the humanized."

---

*Fifth Annual Report, ILLINOIS STATE BOARD OF HEALTH, pp. 508-9.

INDEX.

PAGE.

Abstract of Proceedings, Year 1886 ... i-lxvii
Alexander, W. R., Revocation of Certificate ... iv, vii
Alton, Sanitary Survey of ... 5-16
  Location, Population and Climate ... 5
  Topography ... 5
  Water Supply ... 8
  Drainage and Sewerage ... 8
  Streets, Alleys, etc ... 9
  Habitations ... 9
  Gas and Lighting ... 10
  Garbage ... 10
  Markets and Food Supply ... 11
  Slaughter Houses, etc ... 11
  Manufactories and Trades ... 12
  Hospitals and Public Charities ... 12
  Police and Prisons ... 12
  Saloons ... 13
  Fire Establishments ... 13
  Cemeteries and Burials ... 13
  Public Health Laws, etc ... 14
  Registration and Statistics of Death and Disease ... 14
  Municipal and Sanitary Expenses ... 14
  Public Schools ... 14-16
Anna, Sanitary Survey of ... 16-22
  Location, Population and Climate ... 16
  Topography ... 16
  Water Supply ... 16
  Drainage and Sewerage ... 17
  Streets and Alleys ... 17
  Public Grounds ... 17
  Habitations ... 17
  Gas and Lighting ... 17
  Garbage and Excreta ... 18
  Markets and Food Supply ... 18
  Slaughter Houses and Abattoirs ... 18
  Manufactories and Trades ... 19
  Hospitals and Public Charities ... 19
  Police and Prisons ... 19
  Fire Establishments, etc ... 19
  Cemeteries and Burials ... 19
  Public Health Laws, Regulations, etc ... 20
  Registration ... 20
  Municipal Sanitary Expenses ... 20
  Public Schools ... 20-22
Annual Meeting, ILLINOIS STATE BOARD OF HEALTH, 1886 ... iii-v
Appellate Court, First District, Illinois ... iv
  Lucas R. Williams, plaintiff,
    vs.
  The People, defendants.
Appendix ... 1-266
  Report on State Sanitary Survey ... 1-159
  Vital Statistics and Coroner's Reports ... 161-244
  Meteorological Tables ... 245-249
  Address on State Medicine ... 250-266

Auditing Committee:
  Composition of ... v
  Reports of ... v, viii, xv, xxxiii, xxxix

- Beach Medical Institute of Indianapolis … xv
- Beardstown, Sanitary Survey of … 22–27
  - Location, Population and Climate … 22
  - Topography … 22
  - Water Supply … 23
  - Drainage and Sewerage … 24
  - Streets, Alleys, etc … 24
  - Habitations … 25
  - Lighting … 25
  - Garbage and Excreta … 25
  - Markets and Food Supply … 25
  - Slaughter Houses and Abattoirs … 26
  - Manufactories and Trades … 26
  - Police and Prisons … 26
  - Fire Establishments … 26
  - Cemeteries and Burials … 26
  - Public Health Laws, etc … 26
  - Municipal Sanitary Expenses … 27
  - Public Schools … 27
- Belleville, Sanitary Survey of … 28–41
  - Location, Population and Climate … 28
  - Topography … 28
  - Water Supply … 29
  - Drainage and Sewerage … 30
  - Streets, Alleys and Public Grounds … 30
  - Habitations … 31
  - Gas and Lighting … 31
  - Garbage and Excreta … 31
  - Markets and Food Supply … 32
  - Slaughter Houses and Abattoirs … 33
  - Manufactories and Trades … 33
  - Hospitals and Public Charities … 33
  - Police and Prisons … 34
  - Fire Establishments, etc … 35
  - Cemeteries and Burials … 35
  - Public Health Laws, etc … 35
  - Registration of Statistics of Death and Disease … 36–39
  - Municipal Sanitary Expenses … 39
  - Public Schools … 39–41
- Births in Illinois, 1886 … 163–193
- Bloomington, Inspection of Water Supply … xxxviii
- Bourscheidt, Frank C., Peoria, Examination … xv
- Bridgeport, Chemical Analysis of Water … l, lvii, lviii, lxiv
- Briggs, Ellis, Mayor of Roodhouse … xxvii
- Buckley, B. T., Chairman Health Committe, Freeport … xxv

- Cairo, Meteorological Table, 1886 … 245
- Carlinville, Sanitary Survey of … 41–49
  - Location, Population and Climate … 41
  - Topography … 41
  - Water Supply … 42
  - Drainage and Sewerage … 43
  - Streets, Alleys, etc … 43
  - Habitations … 43
  - Gas and Lighting … 44
  - Garbage and Excreta … 44
  - Markets and Food Supply … 45
  - Slaughter Houses … 45
  - Manufactories and Trades … 45
  - Hospitals and Public Charities … 46
  - Police and Prisons … 46
  - Fire Establishments … 46
  - Cemeteries and Burials … 47
  - Public Health Laws, etc … 47
  - Registration Vital Statistics, etc … 47
  - Municipal Sanitary Expenses … 48
  - Public Schools … 48–49
- Carrollton, Sanitary Survey of … 49–58
  - Location, Population and Climate … 49
  - Topography … 49
  - Water Supply … 50
  - Drainage and Sewerage … 51
  - Streets, Alleys, etc … 51
  - Habitations … 51
  - Garbage and Excreta … 52
  - Markets and Food Supply … 53
  - Slaughter Houses, etc … 53
  - Manufactories and Trades … 54
  - Hospitals and Public Charities … 54
  - Police and Prisons … 54
  - Fire Establishments … 54

  Cemeteries and Burials........ 55
  Public Health Laws, etc........ 55
  Registration, Vital Statistics........ 56
  Municipal Sanitary Expenses........ 56
  Public Schools........56–58
Certificates and Licenses........iv, ix, xvii, xxxv, lx
Chalfant, C. D., M. D., President Board of Health, Sanitary Conference........xxvii
  Sanitary Survey of Streator........132–141
Champaign, Inspection of Water Supply........xxxviii
Charleston, Food Poisoning........xxxvi
Chemical Analyses of Water:
  Beardstown........ 24
  Bridgeport........l, lvii, lviii, lxiv
  Chicago........xlii, xlvi, xlvii, l, lvii, lviii
  Evanston........xlix
  Hyde Park........xlviii
  Joliet........l, lvii, lviii, lix, lxiv
  Lake View........xlviii
  Lockport........l, lviii
  Ottawa........l, lvii, lviii, lxiv
  Peoria........ l
  Rock Island........ 97
  Springfield........lxv
  Tower Hill........lxv
Chesbrough, E. S., *In Memoriam*........xxxviii
Chicago, Meteorological Tables, 1886........ 246
  Water Supply and Sewage Disposal........iv, xiii, xxix, xxxix, xl, xlii, xliii, xlvi, xlvii, xlix, lvi, lvii, lviii, lxvi.
Chicago Northwestern College, Articles of Association........xviii
  Third Annual Report of (1880)........xix
Cholera, Relative to........iv, xii, xxxi, xxxviii
Coast Defenses against Asiatic Cholera........iii
Colleges—Resolution concerning good standing of........ xiv
Collinsville, Sanitary Survey of........58–64
  Location, Population and Climate........ 58
  Topography........ 58
  Water Supply........ 59
  Drainage and Sewerage........ 59
  Streets, Alleys, etc........ 59
  Habitations........ 60
  Gas and Lighting........ 60
  Garbage and Excreta........ 60
  Markets and Food Supply........ 60
  Slaughter Houses........ 61
  Manufactories and Trades........ 61
  Hospitals and Public Charities........ 61
  Police and Prisons........ 61
  Fire Establishments........ 61
  Cemeteries and Burials........ 62
  Public Health Laws, etc........ 62
  Registration and Statistics of Death and Disease........ 63
  Municipial Sanitary Expenses........ 63
  Public Schools........ 63
Compound Oxygen Fraud........xx
Conference, Local Boards of Health........xv
Conference, State Boards of Medical Examiners........xxxiv
Contents, Table of........VII
Cook, William, Canal Inspector........xxxix, xl
Cooper, Dr. C. N., Case of Glanders........xxviii
Corbus, J. R., Health Officer of LaSalle........xxvi
Coroner's Inquests:
  Information furnished by Alex. Woods, M. D........238–244
  Number of Inquests held, 1886........ 238
  Personal data:
    Sex, Color, Social State, Ages, Nnmber each month........ 238
    Causes of Death, Nativity, Occupation........ 239
  Data Concerning Suicides:
    Age, Nativity, Race, Sex, Social State........ 240
    Occupations, Mode of Death, Months........ 241
    Mode, Months, and Sex........ 242
    Kinds of Poison........ 243
  Inquests in each County........243, 244
Corpses, Revised Rules for Transportation of........v
Coulterville, Food Poisoning........xxxvi
Craig, G. G., Health Commissioner of Rock Island........xxi, xxiv
Crow, J. T., M. D., Sanitary Survey of Carrollton........49–58

Deaths in Illinois, 1886........194–235
Decedents in Illinois at Ages over Ninety........236–237
Desplaines River, Pollution from Chicago Sewage........lvi
De Wolf, Oscar C., Health Commissioner of Chicago........xxi
Diphtheria........xxxvi, lxiii
  At Streator........lxiii
Dubuque, Ia., Meteorological Table, 1886........ 247

Dunlap. W. B., Mayor of Mattoon ... xxvii
Dyer, R. B., Health Officer, Ottawa ... xxvi, xl

Earle, Clarence A., Chicago, Examination ... xv
Egloff, William J., Chicago, Examination ... xv
Ehrhardt, Henry, M. D., Sanitary Survey of Beardstown ... 22
Election of Officers, ILLINOIS STATE BOARD OF HEALTH ... iv
Englewood, Scarlet Fever at ... lxiii
Evanston, Chemical Analysis Water ... xlix
Everett, J. M., Health Officer, DeKalb ... xxvii
Examination of Applicants for Certificate—non-graduates ... ix, xv
Expenditures, ILLINOIS STATE BOARD OF HEALTH, Itemized Statement ... lxvii

Financial Statement, ILLINOIS STATE BOARD OF HEALTH ... lxvii
Fischer, C. J. C., M. D., Health Officer, Carlinville ... xxv
  Sanitary Survey of Carlinville ... lxvii
Food Poisoning:
  Charleston ... xxxvi
  Coulterville ... xxxvi
Foote, G. M., Mayor of Galesburg ... xxv
Freeburg, Sanitary Survey of ... 64–68
  Location, Population and Climate ... 64
  Topography ... 64
  Water Supply ... 65
  Drainage and Sewerage ... 65
  Streets, Alleys, etc ... 65
  Habitations ... 65
  Gas and Lighting ... 66
  Garbage and Excreta ... 66
  Markets and Food Supply ... 66
  Slaughter Houses ... 66
  Police and Prisons ... 66
  Fire Establishments ... 66
  Cemeteries and Burial ... 66
  Public Health Laws, etc ... 67
  Registration and Statistics ... 67
  Municipal Sanitary Expenses ... 67
  Public Schools ... 67

Glanders in Human, Recovery from ... xxviii
Griffith, B. B., M. D., Sanitary Survey of Springfield ... 112–131

Hale, James I., Sanitary Survey of Anna ... 16
Hamill, Dr. Robert C., *In memoriam* ... xxxviii
Heath, John William ... xviii
  Revocation of certificate ... xxxiii
Hewitt, C. N., Minnesota State Board of Medical Examiners ... xxxiv
Hough. Joseph P., Lincoln—Examination ... xv
Hyde Park, Chemical Analysis of Water ... xlviii

Illinois and Michigan Canal:
  Chemical Analysis of ... lxiv
  Inspection of ... xxix
  Survey, U. S. Engineer ... lv
Illinois River, Pollution from Chicago Sewage ... lvi
Indianapolis, Ind., Meteorological Table, 1886 ... 248
In Memoriam:
  Mr. E. S. Chesbrough ... xxxviii
  Dr. Robert C Hamill ... xxxviii
Inquests in Illinois, Table by Counties (1886) ... 243, 244
Inspections:
  Bloomington Water Supply ... xxxviii
  Champaign Water Supply ... xxxviii
  Coast Quarantines ... iii
  Illinois and Michigan Canal ... xxix
  Insane Asylum at Anna ... xxx
  Joliet ... xxxi
  Normal School Building, Carbondale ... xxx
  Ottawa ... xxxviii
  Peoria ... xxx
  Rockford ... xxxviii
  Rock Island ... xxxviii
  Southern Illinois Penitentiary, Chester ... xxx
  Streator ... xxxviii

Jenkins, Charles V., Buckley—Examination ... xv
Johnson, A. C., Sanitary Survey of Mt. Vernon ... 68–75
Joliet, Inspection of ... xxxi, lxiv
  Chemical Analysis of Water ... l, lvii, lviii, lix

Kennedy, J. F., Iowa State Board of Medical Examiners ... xxxiv
Keokuk, Io., Meteorological Table, 1886 ... 248
Kreider, G. N., Member Board of Health, Springfield ... xxiv

Lake View, Chemical Analysis of Water xlviii
Laughlin, C. S., Secretary Board of Health, Paris xxvi
Leal, T. R., Sanitary Inspector, Survey of Urbana. 149-159
Leighton, Capt. J. M., Supt. Ill. and Mich. Canal xl
Letter of Transmittal V
Local Sanitation. xxx
Lockport, Chemical Analysis .... l, lviii
Long, Prof. J. H., Chicago .... xl, xlii, xlviii, l, lvii, lxiv, lxv

MacKenzie, W. R., Member State Board of Health, Chester xxii
Mallett, Prof. J. W., Water Analysis, Rock Island 97
Marriages in Illinois, 1886 .... 161, 162
McAdams, Prof. William, Sanitary Survey of Alton 5
McIlvaine, Thos. M., Health Officer of Peoria .... xxi, xxiii, xl
McLean, T. H., Member Board of Health, Hillsboro. xxvi
McMurtrie, Prof. William, Analysis of Water, Beardstown 24
Medical College, Charges Against xxxv
Medical Education, Comments on .... iv, x
Medical-Practice Act, Cases Arising Under. .... iv, lxi
Medical-Practice Act, Resolution—Percentage of Graduates xiv
Meetings of Illinois State Board of Health:
  Annual Meeting, 1885. iii
  Special Meeting, March vii
  Quarterly Meeting, April ix
  Quarterly Meeting, June xvii
  Quarterly Meeting, October xxxiv
Members of Illinois State Board of Health VIII
Meteorological Tables 245-249
Milk Poisoning, Long Branch, N. J xxxvii
Millard, Perry H., Minnesota State Board of Medical Examiners xxxiv
Montgomery, E. B., Member Board of Health, Quincy xxvi
Mt. Vernon, Sanitary Survey of 68-75
  Location, Population and Climate 68
  Topography. 68
  Water Supply 69
  Drainage and Sewerage 69
  Streets, Alleys and Public Grounds 70
  Habitations 70
  Gas and Lighting 71
  Garbage and Excreta 71
  Markets and Food Supply. 71
  Slaughter Houses, etc. 72
  Manufactories and Trades. 72
  Hospitals and Public Charities 72
  Police and Prisons 72
  Fire Establishments 73
  Cemeteries and Burials 73
  Public Health Laws, etc. 73
  Registration of Vital Statistics 74
  Municipal Sanitary Expenses. 74
  Public Schools 74

Nash, Dr. Alfred. xl
Normal School Building, Carbondale, Inspection of xxx
Norris, J. H., Mayor of Metropolis xxv

Oatman, C. R., M. D., Mayor, Survey of Collinsville. 58-64
Oder, E. E., Health Officer, Rockford xxiv
  Sanitary Survey of Rockford 75-94
Ottawa, Chemical Analysis of Water .... l, lvii, lviii, lxiv
  Inspection of xxxviii

Peoria, Inspection of xxx
  Chemical Analysis of Water l
  Meteorological Table, 1886 246
Pittsfield, Scarlet Fever at lxiii
Plummer, Hiram S., M. D., Mayor, Survey of Mt. Vernon. 68-75
Pneumonia xi
Pratt, Herbert E., Chicago—Examination xv
Public Health .... iv, xi, xxviii, xxxv, lxii, lxiv

Quacks and Bogus Diplomas. xviii
Quarterly Report of Secretary, January meeting iv
Quarterly Report of Secretary, April meeting ix
Quarterly Report of Secretary, June meeting. xvii
Quarterly Report of Secretary, October meeting xxv

Rauch, John H., M. D., Secretary Illinois State Board of Health:
  Address on State Medicine 250-266
Reat, J. L., Health Officer, Tuscola. xxvi
  Sanitary Survey of Tuscola 141-148
Renault, Scarlet Fever at lxiii
Report on the Water Supply and Sewage Disposal of Chicago .... xxxix, xlix

Revocation of Certificates:
  Alexander, W. R. ... vii
  Heath, John William ... xxxiii
  Schmid, Alfred ... xv
Robertson, W. S., Iowa State Board of Medical Examiners ... xxxiv
Rockford, Inspection of ... xxxviii
Rockford, Sanitary Survey of ... 75–94
  Location, Population and Climate ... 75–76
  Topography ... 76
  Water Supply ... 78
  Drainage and Sewerage ... 79
  Streets, Alleys, etc ... 80
  Habitations ... 80
  Gas and Lighting ... 81
  Garbage and Excreta ... 81
  Markets and Food Supply ... 81
  Slaughter Houses, etc ... 82
  Manufactories and Trades ... 82
  Hospitals and Public Charities ... 83
  Police and Prisons ... 83
  Fire Establishments ... 84
  Cemeteries and Burials ... 85
  Public Health Laws, etc ... 85
  Registration of Vital Statistics ... 86
  Municipal Sanitary Expenses ... 87
  Public Schools ... 87–94
Rock Island, Sanitary Survey of ... 94–111
  Location, Population and Climate ... 94
  Topography ... 95
  Water Supply ... 96
  Drainage and Sewerage ... 98
  Streets, Alleys, etc ... 99
  Habitations ... 100
  Gas and Lighting ... 100
  Garbage and Excreta ... 101
  Markets and Food supply ... 101
  Slaughter Houses and Abattoirs ... 102, 103
  Manufactories and Trades ... 104
  Hospitals and Public Charities ... 104
  Police and Prisons ... 104
  Fire Establishments ... 105
  Cemeteries and Burial ... 105
  Public Health Laws, etc ... 105–108
  Registration and Vital Statistics ... 108–111
  Municipal Sanitary Expenses ... 110
  Public Schools ... 111

Sangamon County Jail—Report on Vaccination ... lxiii
Sanitary Conference—Local Health Officers ... xxi
  Report of Committee on Resolutions ... xxvii
Sanitary Survey of Cities and Towns:
  Alton ... 5–16
  Anna ... 16–22
  Beardstown ... 22–28
  Belleville ... 28–41
  Carlinville ... 41–49
  Carrollton ... 49–58
  Collinsville ... 58–64
  Freeburgh ... 64–68
  Mt. Vernon ... 68–75
  Rockford ... 75–94
  Rock Island ... 94–111
  Springfield ... 112–131
  Streator ... 132–141
  Tuscola ... 141–148
  Urbana ... 149–159
Sanitation in the State ... iv
Scarlet Fever ... xi
  Englewood ... lxiii
  Pittsfield ... lxiii
  Renault ... lxiii
Schmid, Alfred, Revocation of Certificate ... iv, xv
Sewage Disposal of Chicago ... xliii, xlix, lvii, lxvi
  Supplemental Report on ... lvi
Shaefer, M. W., City Attorney, Belleville ... xxiii
Small-pox ... xi, xxviii, lxiii
Southern Illinois Penitentiary, Inspection of ... xxx
Southwell, Prof. J. H., Report on Artesian Wells ... 97
Springfield, Chemical Analysis of Water ... lxv
  Meteorological Table, 1886 ... 247
Springfield, Sanitary Survey of ... 112–141
  Location, Population and Climate ... 112, 113
  Topography ... 114, 115
  Water Supply ... 116, 117

  Drainage and Sewerage ... 117
  Streets, Alleys, etc ... 118
  Habitations ... 119-120
  Gas and Lighting ... 120
  Garbage and Excreta ... 120, 121
  Markets and Food Supply ... 122
  Slaughter Houses and Abattoirs ... 122
  Manufactories and Trades ... 122
  Hospitals and Public Charities ... 123
  Police and Prisons ... 123
  Fire Establishments ... 124
  Cemeteries and Burials ... 125
  Public Health Laws, etc ... 125
  Registration and Statistics of Death and Disease ... 126-130
  Municipal Sanitary Expenses ... 130
  Public Schools ... 130
Starkel, Charles H., M. D., Sanitary Survey of Belleville ... 28
State Boards of Medical Examiners, Conference of ... xxxiv
State Medicine, Address on, John H. Rauch, M. D., Secretary ... 250-266
St. Louis, Mo., Meteorological Table, 1886 ... 249
Streator, Diphtheria at ... xxxvi, xxxviii, lxiii
Streator, Sanitary Survey of ... 132-141
  Location, Population and Climate ... 132
  Topography ... 132
  Water Supply ... 133
  Drainage and Sewerage ... 133
  Streets, Alleys, etc ... 134
  Habitations ... 134
  Gas and Lighting ... 135
  Garbage and Excreta ... 135
  Markets and Food Supply ... 136
  Slaughter Houses and Abattoirs ... 136
  Manufactories and Trades ... 137
  Hospitals and Public Charities ... 137
  Police and Prisons ... 137
  Fire Establishments ... 138
  Cemeteries and Burials ... 138
  Public Health Laws, etc ... 138
  Registration and Vital Statistics ... 139
  Municipal Sanitary Expenses ... 139
  Public Schools ... 140
Suburban Water Supplies ... xlvii
Suicides, Statistics Concerning ... 240-243
Summary of Office Work and Miscellaneous ... IX
Summary of Report, Illinois State Board of Health ... Ix
Supreme Court, Minnesota:
  Decisions Concerning Medical Practitioners ... iv

Tappan, Henry, Sanitary Survey of Carlinville ... 41
Tower Hill, Chemical Analysis of Water ... lxv
Transportation of Corpses, Revised Rules for ... v
Treasurer's Report, Illinois State Board of Health ... lxviii
Tuscola, Sanitary Survey of ... 141-148
  Location, Population, Climate, Topography ... 141-145
  Public Schools ... 145-147
  Water Supply ... 147
  Public Health ... 147
  Streets, Alleys and Public Grounds ... 147
  City Drainage ... 148
  Police and Prisons ... 148
  Habitations ... 148
  Slaughter Houses ... 148
  Cemeteries ... 148

Union Academy of Southern Illinois ... 22
Urbana, Sanitary Survey of ... 149-159
  Location, Population and Climate ... 149
  Topography ... 149
  Water Supply ... 150
  Drainage and Sewerage ... 151
  Streets and Alleys ... 151
  Habitations ... 152
  Gas and Lighting ... 152
  Garbage and Excreta ... 153
  Markets and Food Supply ... 153
  Slaughter Houses ... 154
  Manufactories and Trades ... 154
  Hospitals and Public Charities ... 155
  Police and Prisons ... 155
  Fire Establishments ... 155
  Cemeteries and Burials ... 156
  Public Health Laws, etc ... 156
  Vital Statistics ... 156
  Municipal Sanitary Expenses ... 157
  Public Schools ... 157-159

Utley, J. H., M. D. Report on Small-pox at Carmi.....xii
  Report on Food Poisoning.....xxxvi
  Report on Vaccination, Sangamon County Jail.....lxiii

Vaccination, Sangamon County Jail:
  Drs. Utley and Wilcox.....lxiii
Vital Statistics:
  Table 1. Marriages in Illinois, 1881–1886.....161–162
    " 1. Births, 1886. Localities.....163–172
    " 2. " " Months.....173–181
    " 3. " " Nationalities of parents.....182–186
    " 4. " " Grouped Ages of Parents.....187–191
    " 5. " " Number of Child of Mother.....192–193
    " 1. Deaths. " At Given Ages.....194–200
    " 2. " " Sex, color, etc.....201–207
    " 3. " " By Months.....208–214
    " 4. " in Cook County, 1886, At Given Ages.....215–221
    " 5. " " " " Sex, Color, etc.....222–228
    " 6. " " " " By Months.....229–235
  Decedents at Ages over Ninety.....236-237
  Coroners' Inquests.....238–244

Walker, J. B., Health Officer, Effingham.....xxvi
Walker, P. R., Report Public Schools, Rockford.....87–94
Williams, Lucas R., *alias Dr. Lucas*.....iv
Woods, Alex., M. D.. Sanitary Survey of Freeburg.....64–68
  Report on Coroners' Inquests, 1886.....238–244

COLUMBIA UNIVERSITY LIBRARIES

This book is due on the date indicated below, or at the expiration of a definite period after the date of borrowing, as provided by the library rules or by special arrangement with the Librarian in charge.

DATE BORROWED	DATE DUE	DATE BORROWED	DATE DUE
C28(842)M50			